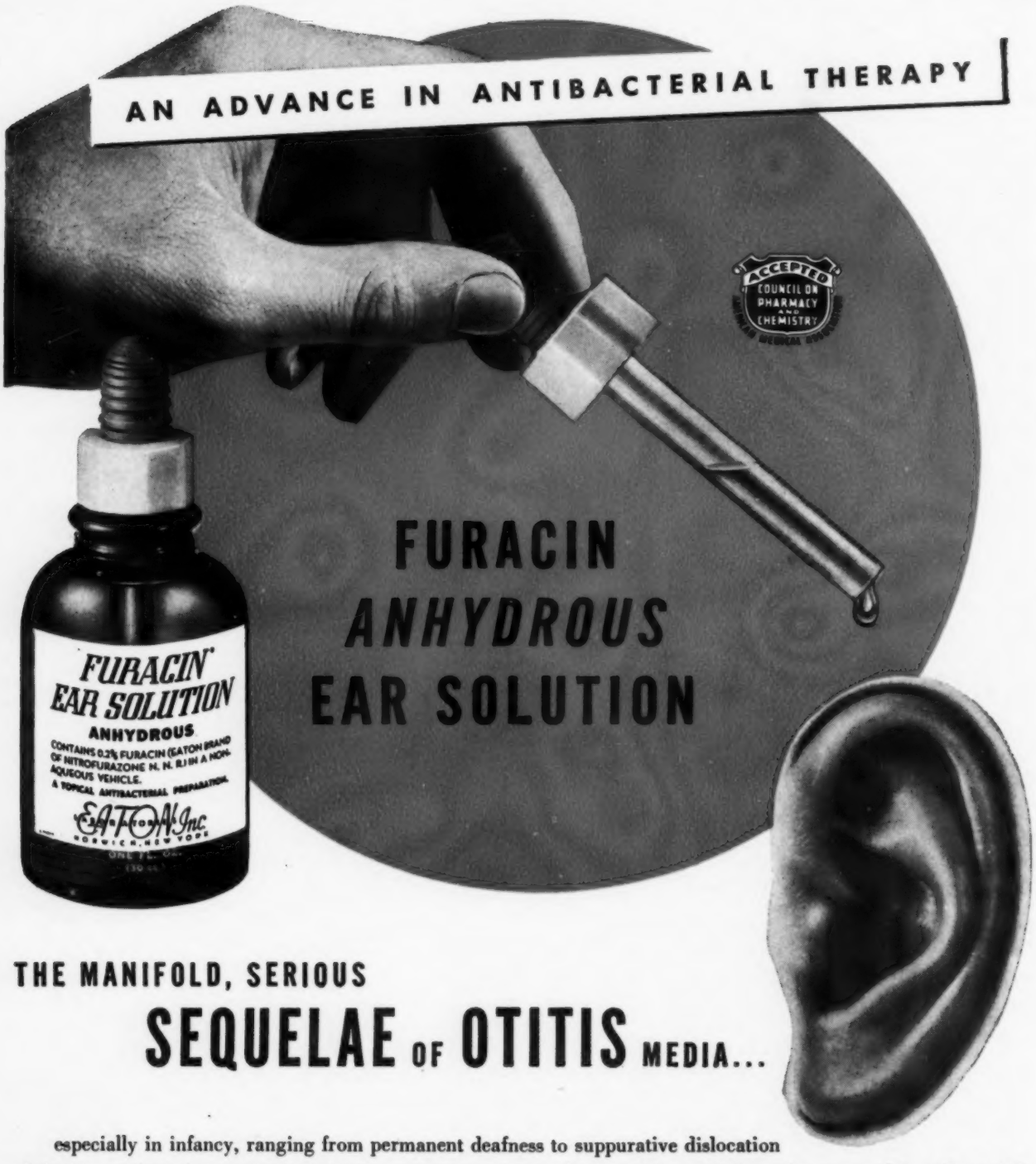
IAL SCIENCES

PUBLIC LIBRARY
MAY 22 1950
DETROIT

INDUSTRIAL MEDICINE AND SURGERY

Volume 19 May 1950 Number 5

AN ADVANCE IN ANTIBACTERIAL THERAPY



THE MANIFOLD, SERIOUS SEQUELAE OF OTITIS MEDIA...

especially in infancy, ranging from permanent deafness to suppurative dislocation of the hip, make it imperative to institute prompt treatment of otitis with a rapidly acting, powerful antibacterial agent. Furacin Anhydrous Ear Solution has often demonstrated its effectiveness when other medicaments have failed.* Its wide antibacterial spectrum encompasses the majority of pathogens concerned; it is effective in the presence of pus. Furacin® brand of nitrofurazone N.N.R. is available in 0.2 per cent concentration in water-miscible vehicles. It is indicated for topical application *in the prophylaxis or treatment of surface infections* of wounds, severe burns, cutaneous ulcers, pyodermas, skin grafts and bacterial otitis. *Literature on request.*

The NITROFURANS

A unique class of antibacterials

EATON LABORATORIES, INC., NORWICH, N. Y.

*Douglass, C.: *The Use of Furacin in the Treatment of Aural Infections*, Laryngoscope 58:1274, 1948.

FURACIN SOLUBLE DRESSING • FURACIN SOLUTION • FURACIN ANHYDROUS EAR SOLUTION

"An ideal antiseptic in

...acute and chronic infections

of the conjunctiva"[1]

SODIUM SULFACETIMIDE SOLUTION 30%

(Sodium SULAMYD®)

Eye Drops

because

* it is the only sulfonamide which can be prepared in concentration as high as 30 per cent.
* it penetrates ocular tissues rapidly, appearing within the substance of the cornea in fifteen minutes.[2,3]
* it has a broad antibacterial spectrum encompassing all common eye pathogens.[4-6]
* it is safe; systemic absorption from topical application is nil, and allergic reactions are rare.
* it produces no local irritation or tissue damage.[7,8]

Dosage: One drop in affected eye every two or three hours, reducing frequency as improvement occurs.

Also available are SODIUM SULFACETIMIDE OPHTHALMIC OINTMENT 10% and SODIUM SULFACETIMIDE NASAL SOLUTION 10%. The latter is effective for temporary relief of symptoms of rhinitis and as an aid for prevention of its complications.

Bibliography: (1) Mayer, L. L.: Arch Ophth. *39*:232, 1948. (2) Robson, J M., and Tebrich, W.: Nature, London *148*:695, 1941. (3) Robson, J. M. and Tebrich, W.: Brit. M. J. *1*.687, 1942. (4) Helmholz, H. F.: Proc. Staff. Meet., Mayo Clin. *17*:529, 1942. (5) Alvaro, M. E.: Am. J. Ophth. *28*:497, 1945. (6) Hirsch, J.: Compt. rend. Soc. Turq. d. sc. phys. et. nat. (13), 1945-6. (7) Dickson, R. M.: Brit. J. Ophth. *26*:529, 1942. (8) Kuhn, H. S.: Tr. Am. Acad. Ophth. (May-June) 1946.

Schering CORPORATION · BLOOMFIELD, NEW JERSEY

SODIUM SULFACETIMIDE SOLUTION 30%

SCHERING INC.

Now... all the advantages of **oatmeal therapy without the mess!**

new **AVEENO**® *requires no cooking... no straining through cloth... no preparation whatever!*

This bother is eliminated for the patient...

Aveeno disperses readily, instantly in the bath

While oatmeal has long been employed for colloid baths and moist dressings, the inconvenience of its preparation has greatly deterred its widest use in treating a variety of dermatoses. Always, heretofore, oatmeal had to be cooked, then strained through cloth into the bath water, in order to recover the active therapeutic ingredients. Now, Aveeno, concentrated from pure oatmeal, provides the essence of oatmeal, free of grit or other irritants, ready for instant use, without preparation whatever. **For samples and literature address...**

E. FOUGERA & CO. INC · 75 Varick St · New York · Sole Distributors

AVEENO® *... the new, ready-to-use concentrate from oatmeal, product of Quaker Oats Company*

FOR COLLOID BATHS: *Useful in the non-specific management of inflammatory skin conditions; infant diaper rashes; dry scaly skin and eczematous conditions.*

FOR SOAPLESS CLEANSING: *Non-irritating; free of grit; for tender sensitive skin.*

AVAILABLE IN DRUG STORES ONLY, IN 18 OZ. AND 5 LB. PACKAGES

INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"

This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

Volume 19 MAY 1950 *Number 5*

CONTENTS

PERIODIC HEALTH EXAMINATION OF EXECUTIVES
S. Charles Franco, M.D. 213

THE RELATIVE FREQUENCY OF OCCUPATIONAL DERMATOSES IN AUTOMOBILE WORKERS
James R. Rogin, M.D., and Marion W. Jocz, M.D. 219

THE FIRST AMERICAN CONGRESS OF INDUSTRIAL MEDICINE —BUENOS AIRES, DECEMBER 1-14, 1949
Wesley Cintra Cox, M.D. 221

EARLY DETECTION OF BENZENE TOXICITY
Lamson Blaney, M.D. 227

THE USE OF RADIOACTIVE STATIC ELIMINATORS IN A PRINTING PLANT
Irving L. Berman, M.D., and Eugene P. Ernest 229

A METHOD OF REDUCING THE ACCIDENT RATE IN BUS OPERATION —Selection of the Bus Operator
Harold Brandaleone, M.D., and Richard H. Daily 231

THE USE OF INTRAVENOUS PROCAINE IN TRAUMA
David J. Graubard, M.D., and Harry V. Spaulding, M.D. 235

CLINICAL OBSERVATIONS ON CARBON DISULFIDE INTOXICATION IN ITALY
Professor Enrico Carlo Vigliani 240

THE NEW FEDERAL CENSUS OF MANUFACTURERS
Russell L. Robertson 243

THE PROBLEM OF HYPERTENSION
James H. Hutton, M.D. 246

ASSOCIATION NEWS 251

BOOK REVIEWS 252

EDITORIAL 255

PERSONAL NEWS 6

NEWS, COMMENT, OPINION 26

(ADVERTISERS' INDEX ..... 36)

[NOTE: The opinions expressed in the editorials of this Journal are not to be considered as necessarily representing the opinions of any associated organizations.]

INDUSTRIAL MEDICINE AND SURGERY, The Journal of Medicine in Industry: Entered as second class mail matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Reentered, October 3, 1949. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Chicago (publishers also of AMERICAN INDUSTRIAL HYGIENE ASSOCIATION QUARTERLY). STEPHEN G. HALOS, President; A. D. CLOUD, Publisher; CAREY P. McCORD, M.D., Consultant Editor; JEAN SPENCER FELTON, M.D., Editor; HAROLD A. HOOPER, Treasurer; DORIS FLOURNOY, Editorial Assistant; STEPHEN G. HALOS, Advertising and Business Manager. Member, Audit Bureau of Circulations. PUBLICATION, EDITORIAL and EXECUTIVE OFFICES, 605 North Michigan Avenue, Chicago 11, Illinois. Subscription $6.00 per year in the United States; $6.50 (U.S. Currency) per year in Canada; $7.00 (U.S. Currency) per year in other countries. Single copies 75 cents. Title Registered in United States Patent Office. Rd. Canada, 1942. Copyright, 1950, by Industrial Medicine Publishing Company, Chicago. CHANGE OF ADDRESS: FOUR weeks' notice required; changes cannot be made without old address as well as new; please furnish postal zone number for new address if city requires it.

INDUSTRIAL AND RAILWAY MEDICAL AND SURGICAL ASSOCIATIONS

INDUSTRIAL MEDICINE AND SURGERY

is the official publication of these organizations but is independently owned and published

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

OFFICERS

President:
ALFRED H. WHITTAKER, M.D.,
Consultant in Industrial Surgery,
1427 East Jefferson Avenue,
Detroit 7, Michigan.

President-Elect:
EDWARD H. CARLETON, M.D.,
Inland Steel Company,
East Chicago, Indiana.

First Vice-President:
ADOLPH G. KAMMER, M.D.,
Carbide & Carbon Chemicals Corp.,
South Charleston 3, West Virginia.

Second Vice-President:
E. A. IRVIN, M. D.,
Cadillac Motor Division,
General Motors Corporation,
Detroit 32, Michigan.

Secretary:
FREDERICK W. SLOBE, M.D.,
425 North Michigan,
Chicago 90, Illinois.

Treasurer and Managing Director:
EDWARD C. HOLMBLAD, M.D.,
28 East Jackson Boulevard,
Chicago 4, Illinois.

DIRECTORS
1948-1950

JAMES M. CARLISLE, M.D.,
Merck & Company, Rahway, N. J.

HAROLD M. HARRISON, M.D.,
George Weston Limited, Canada
302 Bay Street, Toronto 1, Ontario.

O. A. SANDER, M.D.,
Consultant Occupational Diseases
and Industrial Health,
710 Plankinton Avenue,
Milwaukee 3, Wisconsin.

EARL F. LUTZ, M.D.,
General Motors Corporation,
13-211 General Motors Bldg.,
Detroit 2, Michigan.

ROBERT COLLIER PAGE, M.D.,
Standard Oil Co. (New Jersey),
30 Rockefeller Plaza, New York 20.

GEORGE F. WILKINS, M.D.,
New Eng. Tel. & Telegraph Co.,
245 State Street, Boston 9.

DIRECTORS
1949-1951

VALLIANT C. BAIRD, M.D.,
Humble Oil & Refining Company,
Box 2180, Houston, Texas.

HARLEY L. KRIEGER, M.D.,
Ford Motor Company,
Dearborn, Michigan.

C. O. SAPPINGTON, M.D., DR. P.H.,
(1889-1949)
Industrial Health Consultant,
330 South Wells Street,
Chicago 6, Illinois.

JEROME W. SHILLING, M.D.,
The Pacific Telephone & Telegraph Co.,
740 S. Olive Street, Los Angeles 14.

JAMES H. STERNER, M.D.,
Eastman Kodak Company,
Rochester 4, New York.

C. RICHARD WALMER, M.D.,
Medical Director, Industrial Hygiene
Foundation, Mellon Institute,
Pittsburgh 13, Pennsylvania.

DISTRICT COUNSELLORS
1949-1950

"A"—DANIEL L. LYNCH, M.D., MELVIN N. NEWQUIST, M.D., Co-counsellors —Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont.

"B"—CHARLES B. STACY, M.D., — Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia.

"C"—EARLE A. IRVIN, M.D.,—Michigan, Ohio, Pennsylvania, West Virginia.

"D"—H. GLENN GARDINER, M.D. — Illinois, Indiana, Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, Wyoming.

"E"—VALLIANT C. BAIRD, M.D., — Arkansas, Colorado, Louisiana, New Mexico, Texas.

"F"—FENN E. POOLE, M.D., ROBERT T. LEGGE, M.D., Co-counsellors — Arizona, California, Idaho, Nevada, Oregon, Utah, Washington.

"G"—FRANK R. GRIFFIN, M.D.,—Canada.

COMMITTEES
1949-1950

Committee on Alcoholism:
JOHN L. NORRIS, M.D., Chairman, R. G. BELL, M.D., GEORGE H. GEHRMANN, M.D.

Certification Committee:
FREDERICK W. SLOBE, M.D., Chairman, ANTHONY J. LANZA, M.D., EARL F. LUTZ, M.D., RAYMOND HUSSEY, M.D., ROBERT A. KEHOE, M.D., T. LYLE HAZLETT, M.D.

Convention (1950) Committee:
EDWARD H. CARLETON, M.D., Chairman, JOSEPH H. CHIVERS, M.D., CHARLES DRUECK, M.D., H. GLENN GARDINER, M.D., ROBERT M. GRAHAM, M.D., S. M. HANAUER, M.D., J. W. HILBERT, M.D., ELI S. JONES, M.D., HARLEY L. KRIEGER, M.D., HEDWIG S. KUHN, M.D., HARRY E. MOCK, M.D., ARTHUR K. PETERSON, M.D., SAMUEL J. PETRONELLA, M.D., JOHN J. PRENDERGAST, M.D., CARLO SCUDERI, M.D.

Foundation Fund Committee:
EDWARD H. CARLETON, M.D., Chairman, CHARLES B. CRONIN, M.D., JOHN W. HILBERT, M.D., JOSEPH T. NOE, M.D., JOHN J. POUTAS, M.D., McIVER WOODY, M.D.

Health Achievement in Industry Award:
C. RICHARD WALMER, M.D., Chairman, KIEFFER D. DAVIS, M.D., JOHN NEILSON, JR., M.D., JOHN L. NORRIS, M.D., FREDERICK H. SHILLITO, M.D.

Merit in Authorship Committee:
CAREY P. McCORD, M.D., Chairman, O. A. SANDER, M.D.
JAMES H. STERNER, M.D.

History Committee:
ALFRED H. WHITTAKER, M.D., Chairman, OTTO P. GEIER, M.D., C. O. SAPPINGTON, M.D., DR. P.H., MR. HENRY B. SHELLECK, LOYAL A. SHOUDY, M.D.

Knudsen Award Committee:
EARL F. LUTZ, M.D., Chairman, T. LYLE HAZLETT, M.D., OSCAR A. SANDER, M.D., R. R. SAYERS, M.D., HAROLD A. VONACHEN, M.D.

Medical Education & Fellowship:
M. H. KRONENBERG, M.D., Chairman, LEONARD J. GOLDWATER, M.D., CLIFFORD H. KEENE, M.D., ROBERT A. KEHOE, M.D., EMMETT B. LAMB, M.D., WILLIAM F. LAUTEN, M.D., STUART F. MEEK, M.D., WILLIAM A. SAWYER, M.D., VINCENT T. WILLIAMS, M.D.

Membership & Qualification Committee:
NEWTON E. LEYDA, M.D., Chairman, HERBERT R. ATHERTON, M.D., EDWIN DeJONGH, M.D., JOHN F. SHRONTS, M.D., L. HOLLAND WHITNEY, M.D., JOSEPH L. ZEMENS, M.D.

Meritorious Award Committee:
DANIEL L. LYNCH, M.D., Chairman, EDWARD C. HOLMBLAD, M.D., CAREY P. McCORD, M.D., C. O. SAPPINGTON, M.D., DR. P.H., CHARLES F. SHOOK, M.D., RICHARD A. SUTTER, M.D., LYNDLE R. MARTIN, M.D.

National Home Committee:
ALFRED H. WHITTAKER, M.D., Chairman, CHARLES DRUECK, M.D., EDWARD C. HOLMBLAD, M.D., WILLIAM D. McNALLY, M.D., ARTHUR R. METZ, M.D.

Past-Presidents Committee:
HAROLD A. VONACHEN, M.D., Chairman, HENRY S. BROWN, M.D., DANIEL L. LYNCH, M.D., HARRY E. MOCK, M.D., FREDERICK W. SLOBE, M.D.

Public Relations Committee:
CHARLES E. DUTCHESS, M.D., Chairman, ALLAN J. FLEMING, M.D., ARLINGTON F. LECKLIDER, M.D., JEROME W. SHILLING, M.D., HARRY E. TEBBOCK, M.D., R. LOMAX WELLS, M.D., EARL E. WESTON, M.D.

Publications & Editorial Committee:
ROBERT COLLIER PAGE, M.D., Chairman, ARBIE LEROY BROOKS, M.D., LEONARD S. ARLING, M.D., HENRY S. BROWN, M.D., REEVE M. BROWN, M.D., J. EWART CALDWELL, M.D., RUSSELL C. KIMBALL, M.D., J. HUBER WAGNER, M.D.

Section Meetings Committee:
ADOLPH G. KAMMER, M.D., Chairman, PAUL J. BAMBERGER, M.D., MARION W. JOCZ, M.D., WILLIAM F. LAUTEN, M.D., CHARLES BROWN STACY, M.D., REX HAMILTON WILSON, M.D.

Tuberculosis Committee:
LEO PRICE, M.D., Chairman, RICHARD D. MUDD, M.D.

Workmen's Compensation & Insurance:
CARL T. OLSON, M.D., Chairman, THORNTON I. BOILEAU, M.D., J. EWART CALDWELL, M.D., JAMES S. CHALMERS, M.D., BENJAMIN M. FREES, M.D., THOMAS W. NALE, M.D., J. T. SCOTT, JR., M.D., WILLIS M. WEEDEN, M.D., J. DANIEL WILLEMS, M.D.

1951 AAIP&S CONFERENCE, ATLANTIC CITY, APRIL 23-27, 1951

TĪTRALAC

[GLYCINE AND CALCIUM CARBONATE]

ANTACID TABLETS

give
quick
long- lasting relief
because
...they
titrate
like
MILK

TABLETS, 5's AND 10's

LITERATURE AND SAMPLES ON REQUEST

IN CONTINUOUS THERAPY OF GASTRIC HYPERACIDITY ESPECIALLY IN THE MANAGEMENT OF PEPTIC ULCER; ONE TABLET PROVIDING THE ACID-NEUTRALIZING POWER OF EIGHT OUNCES OF FRESH MILK

SCHENLEY LABORATORIES, INC. • 350 FIFTH AVE., N. Y. 1

© SCHENLEY LABORATORIES, INC.

New England Conference of Industrial Physicians and Surgeons

Officers

C. FREDERICK YEAGER, M.D.,
Chairman, Industrial Health Committee, State Medical Society,
178 Jackman Street, Bridgeport, Connecticut.

JAMES I. ROBERT, M.D., Vice-President
Medical Director, New England Power Service Co.,
411 Stuart Street, Boston, Mass.

J. ALLAN THOMPSON, M.D., Secretary & Treasurer.
Assistant Medical Director, New England Tel. & Tel. Co.
245 State Street, Boston.

Board of Directors

PRESTON N. BARTON, M.D.,
New Departure Division, General Motors,
Bristol, Connecticut.

KARL T. BENEDICT, M.D.,
Medical Director, Norton Company,
111 Worcester Street,
West Boylston, Massachusetts.

FREDERICK N. MANLEY, M.D.,
Bethlehem Steel Company,
1200 Hancock Street,
Quincy, Massachusetts.

CHARLES B. CRONIN, M.D.
Medical Director, E. I. du Pont de Nemours & Company,
142 Main Street,
Leominster, Massachusetts.

BLINN W. RUSSELL, M.D.,
Bates Mfg. Company, 98 Pine Street,
Lewiston, Maine.

Component Society of the American Association of Industrial Physicians and Surgeons.

Rhode Island Society of Industrial Physicians and Surgeons

Officers

President
RICHARD F. MCCOART, M.D.,
Universal Winding Company,
Cranston.

Vice-President
THOMAS A. EGAN, M.D.,
New Haven Railroad, Providence.

Secretary
JAMES P. DERBY, M.D.,
Division of Industrial Hygiene,
State Department of Health,
Providence.

Treasurer
ROBERT T. HENRY, M.D.,
Newman Crosby Company,
Pawtucket.

Board of Directors

FRANK A. FERLIANO, M.D.,
Providence Tuberculosis League,
Division of Industrial Tuberculosis,
State of Rhode Island, Providence.

REMINGTON P. CAPWELL, M.D.,
Whittet-Higgins Co., Providence.

EDWARD F. DOUGHERTY,
Liberty Tool and Gauge Co.,
Providence.

JOSEPH C. JOHNSTON, M.D.,
Texas Company, Providence.

CHARLES L. FARRELL, M.D.,
Collyer Insulated Wire Co.,
Pawtucket.

Section of the New England Conference of Industrial Physicians and Surgeons.

Association of Railway and Industrial Physicians and Surgeons of Kansas City

Officers

F. L. FEIERABEND, M.D., President
H. F. FLANDERS, M.D., Vice-President
L. A. O'BRIEN, M.D., Secretary-Treas.

Directors

CARL LINDQUIST, M.D.
JOHN E. CASTLES, M.D.
F. L. FEIERABEND, M.D.
VINCENT T. WILLIAMS, M.D.
L. A. O'BRIEN, M.D.

Component Society of the American Association of Industrial Physicians and Surgeons.

NEWS

FRANK E. GRAY, M.D., of Pittsburgh, has been appointed Plant Medical Director of the East Pittsburgh Division of the Westinghouse Electric Corporation. DR. GRAY was graduated from the University of Toronto School of Medicine in 1924, and interned at Columbia Hospital, Pittsburgh. He is a member of the staff of the hospital. He joined the medical staff of Westinghouse Electric Corporation in 1926, and for the past five years has served in the capacity of staff specialist.

FRANK R. FERLAINO, M.D., Medical Director of the New York Office of General Motors Corporation, has been named Assistant Clinical Professor in the Department of Industrial Medicine and Assistant Attending Physician of University Hospital of the New York University-Bellevue Medical Center. DR. FERLAINO is Chairman of the New York State Athletic Commission Medical Advisory Board, and Official Secretary of the American College of Chest Physicians. He has taught many years at New York Post-Graduate Medical School. He is a graduate of Johns Hopkins Medical School, having previously attended Princeton, where he was All-American lacrosse goal-keeper.

T. LYLE HAZLETT, M.D., for 30 years Medical Director of Westinghouse Electric Corporation, retires according to Corporation policy on May 1, 1950. DR. HAZLETT will continue in the field of industrial medicine on a consulting basis with offices maintained at 3509 Fifth Avenue, Pittsburgh 13, Pennsylvania. Also, he will continue as Head of the Department of Industrial Hygiene of the School of Medicine, University of Pittsburgh.

WILLIAM L. LEA, Madison, Assistant Professor of Civil Engineering at the University of Wisconsin, has been appointed Director of the Division of Industrial Hygiene in the State Board of Health. PROFESSOR LEA will fill the position which has been vacant since the death of the former Director, DR. PAUL BREHM, last April. He has the degree of Ph.D. in chemistry from

The Industrial Doctor
Now combined with
INDUSTRIAL MEDICINE and SURGERY

New York State Society of Industrial Medicine, Inc.

Officers

RUSSELL C. KIMBALL, M.D., *President*
—Consolidated Edison Co.,
4 Irving Place, New York.

PHILIP L. FORSTER, M.D., *Vice-President*
—367 State St., Albany.

IRVING GRAY, M.D., *Secretary*
—25 Plaza St., Brooklyn.

JOHN J. BLACKFORD, *Executive Secretary and Treasurer.*
—40 East 51st St., New York.

Executive Council

HALCYON HALSTED, M.D.,
Pelham Manor.

FRANCIS J. RYAN, M.D.,
Syracuse.

CHARLES D. SQUIRES, M.D.,
Binghampton.

ANTHONY AVATA, M.D., New York,
Hartford Accident and Indemnity Co.

HARRY V. SPAULDING, M.D., New York,
General Accident Co.

CHRISTOPHER STRAHLER, JR., M.D.,
Albany.

REEVE M. BROWN, M.D.,
Buffalo.

JOHN J. WITTMER, M.D., New York,
Consolidated Edison Co.

Component Society of the American Association of Industrial Physicians and Surgeons.

New Jersey Association of Industrial Physicians and Surgeons

Officers

C. S. MCKINLEY, M.D., President
—Bakelite Corp., Bound Brook, N. J.

E. W. PROBST, M.D., Vice-President
—276 Willow Ave., Lyndhurst, N. J.

G. A. PAUL, M.D., Secretary
—Hyatt Bearings Div. General Motors,
Harrison, N. J.

R. A. YOUNG, M.D., Treasurer
—Linden Division, General Motors,
Linden, N. J.

Directors

J. M. CARLISLE, M.D.,
Merck and Co., Inc., Rahway, N. J.

A. GIBSON, M.D.,
Merck and Co., Inc., Rahway, N. J.

A. F. MANGELSDORFF, M.D.,
Calco Chemical Division,
Bound Brook, N. J.

Component Society of the American Association of Industrial Physicians and Surgeons.

Michigan Association of Industrial Physicians and Surgeons

Officers

JOSEPH L. ZEMENS, M.D., President
1580 E. Grand Boulevard,
Detroit, Michigan.

OTTO J. PRESTON, M.D., President-Elect.
300 North Chevrolet Ave.,
Flint, Michigan.

T. I. BOILEAU, M.D., Vice-President.
16-546 Parkside,
Detroit, Michigan.

GORDON A. EADIE, M.D., Secretary-Treas.
5140 Riopelle St.,
Detroit, Michigan.

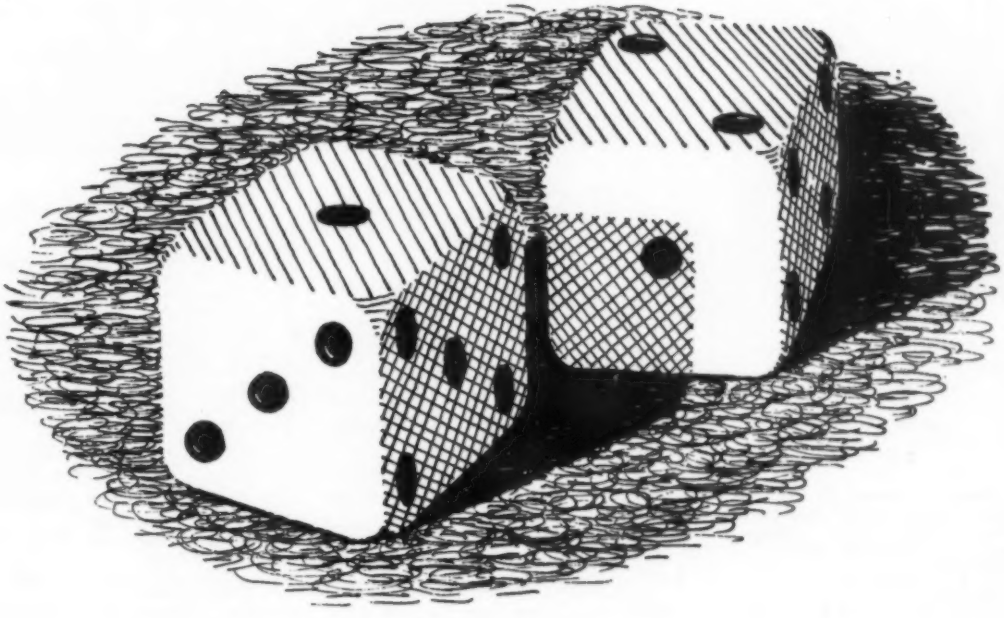
Board of Directors

A. L. BROOKS, M.D., Flint.
J. D. MILLER, M.D., Grand Rapids.
E. A. IRVIN, M.D., Detroit.

Component Society of the American Association of Industrial Physicians and Surgeons.

THIS ALL EXPENSE HOSPITAL PLAN

LEAVES NOTHING TO CHANCE!



There are thousands of "hospital care" plans. Each will pay hospital bills for your employee—*If* he isn't sick too long. *If* he's in the right hospital. *If* there aren't too many "extras."

"Ifs" can result in financial catastrophe for many of your employees. Financial problems can, in turn, destroy productive efficiency. Why gamble? The John Marshall Plan pays ***all*** hospital expenses, regardless of amount, for 120 days of semi-private care. It pays ***all*** extras. It covers ***every*** admission, in ***any*** hospital in the world.

This ***complete*** plan is within easy reach of every employee on your payroll. Whether you directly pay all, part or none of the costs, learn today how this John Marshall Plan can remove the element of chance.

FOR INFORMATION ABOUT THIS MULTI-MILLION DOLLAR John Marshall **PLAN**

Consult **JENS M. DELLERT AND ASSOCIATES**

ONE NORTH LA SALLE STREET, CHICAGO 2, ILLINOIS

SCIENTIFICALLY DESIGNED HEALTH CARE, PENSION AND INCENTIVE PLANS

Western Association of Industrial Physicians and Surgeons

Officers

President, RODNEY R. BEARD, M.D., Medical Superintendent, Pan American World Airways.

Vice-President, E. P. LUONGO, M.D., Medical Director, General Petroleum Corporation.

Secretary, CHRISTOPHER LEGGO, M.D., Medical Director, California & Hawaiian Sugar Refining Corp., Ltd.

Treasurer, JOHN E. KIRKPATRICK, M.D., San Francisco, California.

Assistant Secretary, EDITH PECK, California & Hawaiian Sugar Ref. Corp

Directors

LOUIS D. CHENEY, M.D.—1950
Los Angeles, California.

JOHN R. ERWIN, M.D.—1950
Medical Director, Boeing Airplane Co.

HOMER S. ELMQUIST, M.D.,
Los Angeles, California.

CLARENCE L. LLOYD, M.D.,
North American Aviation, Inc.

FENN E. POOLE, M.D.,
Glendale, California.

EDWARD E. DART, M.D.,
Oakland, California.

Chairman, Board of Directors

JEROME W. SHILLING, M.D.,
Los Angeles, California.

Component Society of the American Association of Industrial Physicians and Surgeons.

Central States Society of Industrial Medicine and Surgery

Officers

President
THOMAS C. BROWNING, M.D., Chicago.

President-Elect
EMMETT B. LAMB, M.D., Indianapolis.

Vice-President
H. GLENN GARDINER, M.D., Chicago.

Secretary-Treasurer
CHARLES DRUECK, M.D., 55 E. Washington, Chicago 2, Ill.

Board of Governors

1950—MELVIN L. HOLE, M.D., Danville, Ill.
BRYCE B. REEVE, M.D., Chicago.
WILLIAM G. BESSMER, M.D., Davenport, Ia.
OSCAR A. SANDER, M.D., Milwaukee, Wis.
JOSEPH H. THOMAS, M.D., Chicago.

1951—ROBERT M. GRAHAM, M.D., Mdse. Mart, Chicago.
JAMES J. CALLAHAN, M.D., Chicago.
DONALD C. CONZETT, M.D., Dubuque, Ia.
JOHN F. SHRONTS, M.D., Minneapolis, Minn.
ELSTON L. BELKNAP, M.D., Milwaukee, Wis.

1952—D. ORIS CONLEY, M.D., Streator, Ill.
DANIEL E. DORCHESTER, M.D., Sturgeon Bay, Wis.
FELIX JANSEY, M.D., Chicago, Ill.
JOHN L. ROCK, M.D., Oglesby, Ill.
RAY S. WESTLINE, M.D., Chicago, Ill.

Component Society of the American Association of Industrial Physicians and Surgeons.

Territorial Association of Plantation Physicians

Officers

President
SAMUEL R. WALLIS, M.D.,
Lihue, Kauai, T.H.

Vice-President
CLARENCE L. CARTER, M.D.,
Honakaa, Hawaii, T.H.

Secretary-Treasurer
FRANK HATLELID, M.D.,
Waialua, Oahu, T.H.

Executive Secretary
DORIS LARSEN, 1133 Punchbowl,
Honolulu, T.H.

Component Society of the American Association of Industrial Physicians and Surgeons.

the University of Wisconsin, and was with the state Board of Health as an engineer from 1940 to 1948.

WILLIAM F. ASHE, M.D., Associate Professor of Industrial Medicine at the University of Cincinnati College of Medicine, has resigned to become chief of the medical service of the Holzer Clinic and director of the department of internal medicine of the Holzer Hospital in Gallipolis. DR. ASHE came to Cincinnati from Western Reserve University School of Medicine, Cleveland, in 1938. In 1940 he became instructor in medicine and research associate in applied physiology at the College of Medicine. After World War II he returned to the university to a dual appointment in the College of Medicine's department of internal medicine, and in the Kettering Laboratory of Applied Physiology, where he has been engaged in the development of post-graduate medical education and research in the field of industrial health.

THE RAMAZZINI SOCIETY will hold its 1950 Rendezvous on June 22, 23 and 24, at the Alta Mira Hotel at Sausalito, California, across the bay from San Francisco. DR. A. J. LANZA, of New York, is to deliver the Ramazzini Oration.

DR. RODNEY R. BEARD, Medical Director, Pacific-Alaska Division, Pan American World Airways, President of the WESTERN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, and Professor of Preventive Medicine and Public Health at Stanford University Medical School at San Francisco, delivered one of the Lane Popular Medical Lectures of 1950 on April 19. His subject was "The Common Cold."

THE WESTERN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS will hold its annual meeting at San Francisco on Sunday, June 25, 1950, the day preceding the A.M.A. meeting. DR. CHRISTOPHER LEGGO, Secretary of the Association, is in charge of the program.

A NEW bulletin, *Industrial Health News*, is being published by the Division of Industrial Health of the Los Angeles City Health Department. The purpose is to serve as an important medium of communication to

Florida Association of Industrial and Railway Surgeons

Officers

President
FREDERICK H. BOWEN, M.D.,
2000 Park St., Jacksonville, Fla.

Vice-President
P. J. MANSON, M.D.,
8037 N.E. 2nd Ave., Miami, Fla.

Secretary-Treasurer
JOHN H. MITCHELL, M.D.,
241 W. Ashley, Jacksonville, Fla.

Directors

F. D. GRAY, M.D., Orlando, Fla.
K. A. MORRIS, M.D., Jacksonville, Fla.
F. A. VOGT, M.D., Miami, Fla.
L. J. NETTO, M.D., West Palm Beach, Fla.

Component Society of the American Association of Industrial Physicians and Surgeons.

Association of Mine Physicians

Officers

GEO. W. EASLEY, M.D., President
Williamson, West Virginia.

E. M. HOWARD, M.D., Vice-President,
Harlan, Kentucky.

J. C. LAWSON, M.D., Secretary-Treasurer,
Williamson, West Virginia.

W. R. LUNDY, Executive Secretary,
Offices: Williamson, W. Va.
Pineville, Ky.

Committee on Organization

R. O. ROGERS, M.D., Chairman,
Bluefield, W. Va.
C. L. HARSHBARGER, M.D., Norton, Va.
CARL E. AUSMUS, M.D., Jellico, Tenn.
J. A. BENNETT, M.D., Algoma, W. Va.
J. C. MOORE, M.D., Keen Mountain, Va.
T. M. PERRY, M.D., Jenkins, Ky.
P. E. BLACKBERRY, M.D., Louisville, Ky.
CARL A. GROTE, M.D., Huntsville, Ala.
C. N. CARRAWAY, M.D., Birmingham, Ala.

Component Society of the American Association of Industrial Physicians and Surgeons.

Chicago Society of Industrial Medicine and Surgery

Officers

BURTON C. KILBOURNE, M.D., Chicago, President

T. R. HINCHION, M.D., Chicago, Vice-President.

CHARLES DRUECK, M.D., Chicago, Secretary-Treasurer.

Board of Governors

Terms to Expire 1950.
KARL G. RUNDSTROM, M.D., Chicago.
GEORGE W. BOHR, M.D., Chicago.
GERALD J. FITZGERALD, M.D., Chicago.

Terms to Expire 1951.
DWIGHT I. GEARHART, M.D., Chicago.
JOHN R. MERRIMAN, M.D., Evanston.
CARLO SCUDERI, M.D., Chicago.

Terms to Expire 1952.
FELIX JANSEY, M.D., Chicago.
BILLE HENNAN, M.D., Chicago.
J. V. WALKER, M.D., Chicago.

Milwaukee Association of Industrial Physicians and Traumatic Surgeons

Officers

President
S. H. WETZLER, M.D.,
606 W. Wisconsin Ave., Milwaukee.

Vice-President
ELSTON L. BELKNAP, M.D.,
231 W. Wisconsin Ave., Milwaukee.

Secretary-Treasurer
GEORGE H. HOFFMANN, M.D.,
7006 W. Greenfield Ave., Milwaukee.

Board of Directors

U. E. GEBHARD, M.D.,
1332 S. 16th Street, Milwaukee.
H. G. OAKLAND, M.D.,
1651 N. 12th Stret, Milwaukee.
EDWARD QUICK, M.D.,
411 E. Mason St., Milwaukee.
DAVID MEHIGAN, M.D.,
231 W. Wisconsin Ave., Milwaukee.

Look to the Tongue

The tongue may prove to be a good indicator, when vitamin B-complex deficiencies are suspected. When the vitamin B-complex factors are at a low level, let the *taste* of the new, natural orange-flavored OMNI-BETA* IMPROVED provide an added incentive for accepting and raising the vitamin B intake.

The pleasant taste of **Omni-Beta*** *Improved*

masks its rich, full bodied complement of all of the vitamin B-complex factors with the secondary anti-anemia fraction derived from whole liver. Young and old readily accept and frequently even request larger doses of OMNI-BETA* IMPROVED.

One teaspoonful of Omni-Beta* Improved contains:

Vitamin B_1 (thiamine hydrochloride) 2.0 mg. (2xM.D.R.†)
Vitamin B_2 (riboflavin) 2.0 mg. (M.D.R.†)
Niacinamide 10.0 mg.**
Pantothenic Acid 2.0 mg.‡
Vitamin B_6 (pyridoxine hydrochloride) 0.2 mg.‡
Choline 20.0 mg.‡
Inositol 10.0 mg.‡
Secondary fraction derived from 10 grams fresh liver

†Minimum Daily Requirement
***Minimum Daily Requirement not established*
‡Need in human nutrition not yet established

OMNI-BETA* IMPROVED is available in bottles of 8 and 16 fl. oz. and 1 gal.

William R. Warner & Co., Inc.
New York St. Louis

**T. M. Reg. U. S. Pat. Off.*

★ AMERICAN ASSOCIATION OF RAILWAY SURGEONS ★

Officers

President:
JOHN A. CAHILL, M.D., Dubuque, Iowa

President Elect:
D. RAY MURDOCK, M.D., Greensburg, Pa.

Vice-Presidents:
C. L. GELLENTHIEN, M.D., Valmora, N. M.
SOUTHGATE LEIGH, JR., M.D., Norfolk, Va.

Recorder:
JAMES K. STACK, M.D., Chicago

Treasurer:
THEODORE L. HANSEN, M.D., 139 West Van Buren, Chicago 5, Wabash 2-3200, Ext. 220

Executive Board

ARTHUR R. METZ, M.D., Chairman, Chicago.
MILTON B. CLAYTON, M.D., Washington, D.C.
ROBERT M. GRAHAM, M.D., Chicago.
ALEXANDER M. W. HURSH, M.D., Philadelphia.
RAYMOND B. KEPNER, M.D., Chicago.
WILLIAM W. LEAKE, M.D., Chicago.

Secretary:
CHESTER C. GUY, M.D., 5800 Stony Island Ave., Chicago 37, Midway 3-9200

63rd Annual Meeting, April 3-5, 1951, at the Drake Hotel, Chicago

American Association of Industrial Dentists

Officers

President:
EDWARD R. ASTON, D.D.S.,
Pennsylvania Department of Health,
Harrisburg, Pennsylvania.

President-Elect:
LEONARD S. MORVAY, D.D.S.,
30 Central Avenue,
Newark, New Jersey.

Secretary:
F. J. WALTERS, D.D.S.,
Room 4068,
Federal Security Building—South.
Washington 25, D.C.

Treasurer:
E. G. SMITH, D.D.S.

Directors

1950

LYMAN D. HEACOCK, D.D.S.,
U.S. Veterans Hospital,
Nashville, Tennessee.

EARL H. THOMAS, D.D.S.,
55 E. Washington Street,
Chicago, Illinois.

1951

C. RUSSELL FRICKE, D.D.S.,
Philadelphia Company,
Pittsburgh, Pennsylvania.

J. H. FREDERICK, D.D.S.,
E. I. du Pont Company,
Wilmington, Delaware.

1952

V. J. FORNEY, D.D.S., M.P.H.,
4604 S. Chelsea Lane,
Bethesda, Maryland.

Aero Medical Association of the United States; Secretary: DR. D. S. BRACHMAN, 1016 Dime Bldg., Detroit 24, Mich.

American Academy of Occupational Medicine: Secretary, JAMES J. CARLISLE, M.D., 550 Hillcrest, Westfield, N. J.

American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

American Association of Industrial Nurses, 654 Madison Ave., New York 21, N. Y. GLADYS L. DUNDORE, R.N., Executive Secretary.
April 21-27, 1951, Atlantic City.

American Association of Railway Surgeons, 5800 Stony Island Ave., Chicago 37, Illinois. CHESTER C. GUY, M.D., Secretary.
April 3-5, 1951, Chicago.

American Chemical Society, 1155 Sixteenth St., N.W., Washington 6, D.C. A. H. EMERY, Secretary.

inform industry in the Los Angeles area of industrial health services and programs.

JOHN F. KNUDSEN has been appointed Director of the Industrial Hygiene Department, Kennecott Copper Corporation, Garfield, Utah. He succeeds R. T. PRING, who recently became Technical Director of the Dust and Fume Division, American Wheelabrator and Equipment Company.

JOSEPH SHILEN, M.D., Director of the Bureau of Industrial Hygiene in the Pennsylvania Department of Health, announces the appointment of CHARLES F. ENGEL, M.D., as Industrial Hygiene Physician, with headquarters in Pittsburgh. DR. ENGEL recently retired after 34 years as Medical Director for the Westinghouse Electric Corporation, East Pittsburgh, where he did outstanding work in the field of industrial health and hygiene. In 1940 he received from Westinghouse the Order of Merit and Silver "W" for his research into the effects of electricity on the human body. As a supplement to the preplacement examination, he was instrumental in installing a program of periodic examinations for workers employed in hazardous jobs. He is on the faculty of the University of Pittsburgh as instructor in the Hygiene Department, and is a member of the Westinghouse Valley Medical Society, the Allegheny County Medical Society, the Medical Society of the State of Pennsylvania, the American Medical Association, the American College of Physicians, the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, the National Safety Council, and the Western Pennsylvania Safety Council.

American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. E. R. LOVELAND, Secretary.

American College of Surgeons, 40 East Erie St., Chicago 11, Ill.

American Conference of Governmental Industrial Hygienists, U. S. Public Health Service, Washington, D. C. J. J. BLOOMFIELD, Secy-Treas.
April 22-24, 1951, Atlantic City

American Industrial Hygiene Association 4400 Fifth Ave., Pittsburgh 13, Pa HENRY F. SMYTH, JR., Executive Secy.
April 23-26, 1951, Atlantic City.

American Medical Association, Council on Industrial Health, 535 North Dearborn St., Chicago 10, Ill. CARL M. PETERSON, M.D., Secretary.

American Public Health Association, 1790 Broadway, New York 19, N. Y. REGINALD M. ATWATER, M.D., Executive Secretary.

Association for the Surgery of Trauma.

Canadian Public Health Association, Vancouver, B. C., Canada.

Council on Industrial Health, American Medical Association; Secretary: CARL M. PETERSON, M.D., 535 N. Dearborn St., Chicago 10.

Industrial Hygiene Foundation of America, 4400 Fifth Ave., Pittsburgh 13, Pa. JOHN F. MCMAHON, Managing Director.

International Association of Industrial Accident Boards & Commissions, MARSHALL DAWSON, U.S. Dept. of Labor, Washington, D.C., Secretary-Treasurer.

Lead Industries Association, 420 Lexington Ave., New York 17, N.Y. ROBERT L. ZIEGFELD, Secretary-Treasurer.

National Council on Rehabilitation; Secretary-Treasurer: MR. HOLLAND HUDSON, 1790 Broadway, New York 19.

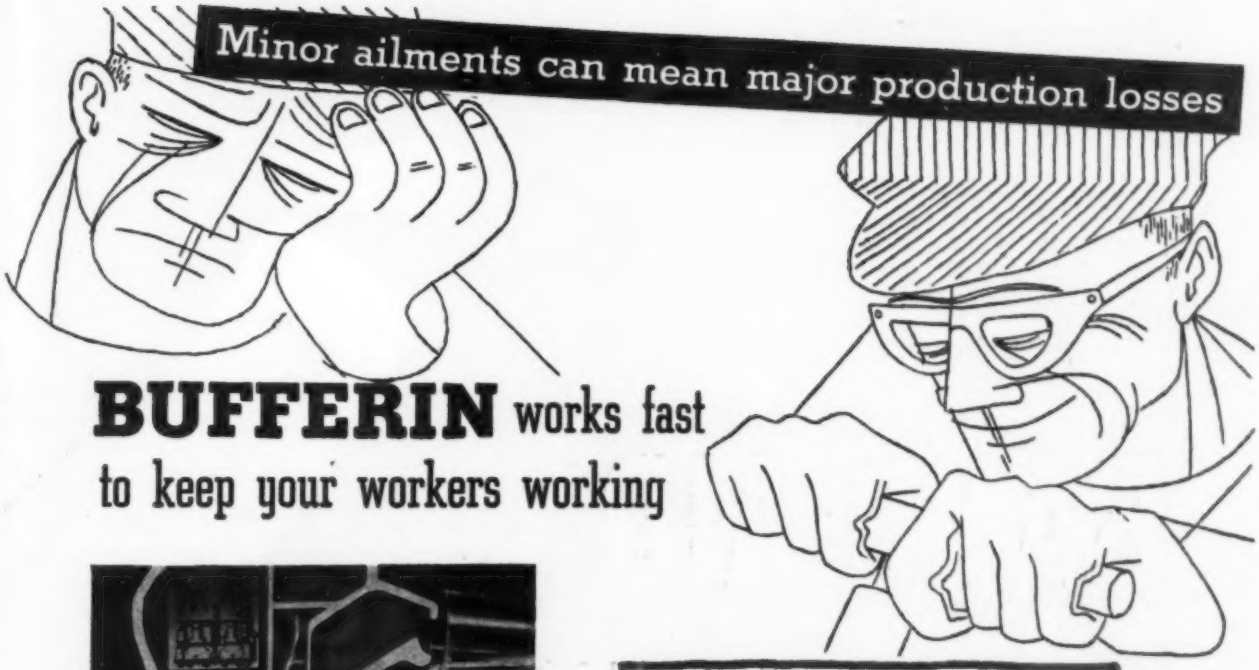
National Metal Congress, Philadelphia.

National Rehabilitation Association, 411-7th Ave., Nashville 4, Tenn. LOUIS R. SCHUBERT.

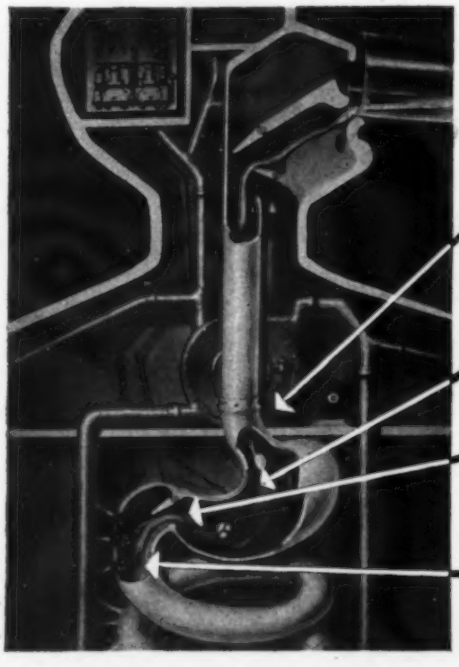
National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. NED H. DEARBORN, President; CARMEN FISH, Secretary.

National Tuberculosis Association, 1790 Broadway, New York 19, N. Y. H. STUART WILLIS, Secretary.

Saranac Laboratory of Edward L. Trudeau Foundation, 7 Church Street, Saranac Lake, N. Y. ARTHUR J. VORWALD, M.D., Director.



BUFFERIN works fast to keep your workers working



1. BUFFERIN enters the stomach here.

2. BUFFERIN exerts its antacid effect, lessening the possibility of gastric distress.

3. BUFFERIN helps dilate the pyloric valve, promptly leaves the stomach.

4. BUFFERIN'S analgesic component is absorbed into the blood *twice as fast as aspirin,* relieves pain.

Headache, dysmenorrhea, muscular pains—these are some of the illnesses which send workers home early or keep them out of work for a day or two—keep machines idle and desks closed. Minor ailments, yes, but they add up to major losses of production.

When you dispense BUFFERIN to your workers you assure *faster relief of pain.* Clinical studies[1] show that within ten minutes after BUFFERIN is ingested, blood salicylate levels are as great as those attained by aspirin in twice this time. That is why BUFFERIN *acts twice as fast as aspirin.*

BUFFERIN has *greater gastric tolerance.* BUFFERIN'S antacid ingredients provide protection against the gastric distress so often seen with aspirin[1]. BUFFERIN, therefore, is especially suited for use when prolonged use of salicylates is indicated.

1. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. A., Sc. Ed. 39:21, Jan. 1950.

In vials of 12 and 36 and bottles of 100. Scored for divided dosage.

Each BUFFERIN tablet contains 5 grains of acetylsalicylic acid with optimal proportions of magnesium carbonate and aluminum glycinate.

BUFFERIN
is a trade-mark of the Bristol-Myers Company

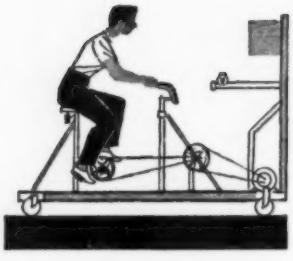
Accepted Council on Dental Therapeutics American Dental Association

A product of BRISTOL-MYERS COMPANY
19 West 50 St., New York 20, N. Y.

BAND-AID
TRADE MARK
ADHESIVE BANDAGES
regular and elastic
BAND-AID
ADHESIVE BANDAGE
STERILE
WATERPROOF
PLAIN
GAUZE PAD
made only by

O ADHESIVE BANDAGES 1" x 3"
AND-AID
TRADE MARK
SIVE BANDAGES
Plain Pad
on&Johnson
Johnson&Johnson

The Effect OF THE CEREAL BREAKFAST ON PHYSIOLOGIC RESPONSES



Work output, choice reaction time, and tremor magnitude were measured by specially designed apparatus.

The widely accepted basic breakfast pattern of fruit, cereal, milk, bread and butter effectively combats the detrimental influence of breakfast skipping. These are the results of a study recently conducted at the medical college of a prominent university.

In this study,* ten male students served as subjects. Their physiologic responses were established for a three week period during which the basic breakfast outlined above was the daily habit; breakfast was then omitted entirely for the following three weeks and identical observations were repeated.

The investigators report *decrease* in maximum work output, *increase* in choice reaction time, and *increase* in tremor magnitude when breakfast was omitted. These findings, recorded during the pre-noon hour, indicate that breakfast skipping is detrimental to late morning physical stamina and mental acuity, and that the adverse effects of this practice can be prevented by making the basic breakfast the daily habit.

This basic breakfast pattern is widely endorsed by nutritionists; it offers outstanding economy, excellent nutrient contributions, and almost endless variety.

* The results of this study will be published shortly.

The presence of this seal indicates that all nutritional statements herein have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

CEREAL INSTITUTE, INC.

135 South La Salle Street • Chicago 3

A RESEARCH AND EDUCATIONAL ENDEAVOR DEVOTED TO THE BETTERMENT OF NATIONAL NUTRITION

practical ideals in diabetes

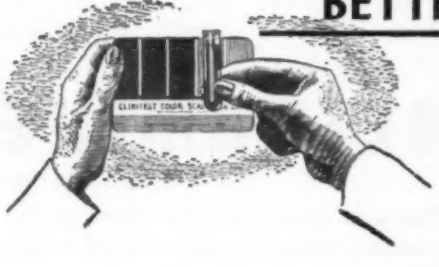
EARLY DIAGNOSIS

"The ideal detection center is in the private physician's office."[1] This approach to widespread early diagnosis of diabetes can be practical when *every routine examination of every patient includes urine-sugar analysis.* Routine analysis, in turn, is more practical for the physician who uses *Clinitest* (Brand) Reagent Tablets. The test is simple, rapid and self-contained (no external heating). Results are known at once

CLINITEST

REAGENT TABLETS ***for urine-sugar analysis***

BETTER CONTROL



"Generally, only the well controlled diabetic patient may expect to live to normal expectancy and without premature arterial degeneration."[2] Here too, practicality recommends *Clinitest.* The *Clinitest* (Brand) Urine-sugar Analysis Set (a compact pocket unit) enables the patient, under the physician's guidance, to make regular checkups simply, accurately and conveniently. This is a practical guarantee of the patient's cooperation without which adequate control by the doctor is hardly feasible.

Clinitest, reg. trademark

Bibliography: (1) Wilkerson, H. L. C.: New York State J. Med. *49*:2945 (Dec. 15) 1949. (2) Sweeney, J. S.: Texas State J. Med. *45*:623 (Sept.) 1949.

AMES COMPANY, INC · ELKHART, INDIANA
AMES COMPANY OF CANADA, LTD., TORONTO

Comparative studies at various dosage levels show:

Side effects "much fewer and much less severe"*

Spring is the season when allergic rhinitis due to grass and tree pollens occurs, often simulating or aggravating the common "cold." For relief of catarrhal symptoms due to allergy, more and more physicians rely on

NEOHETRAMINE®

Hydrochloride

as their first choice in antihistaminic therapy, because it is effective and exceptionally well-tolerated.

INDICATED in allergic rhinitis and allergic dermatoses.

*Schwartz, E.: Ann. Allergy 7:770 (Nov.-Dec.) 1949

Neohetramine is the registered trademark of the Nepera Chemical Co., Inc., for its brand of Thonzylamine—N, N-dimethyl-N' p-methoxybenzyl-N' (2-pyrimidyl) ethylenediamine.

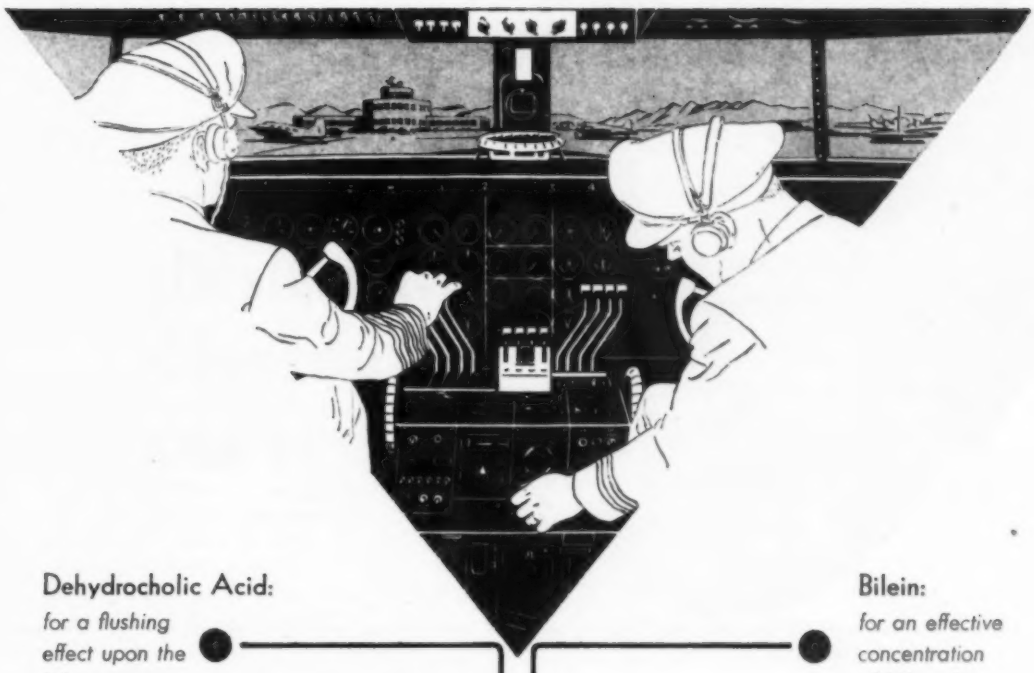
Wyeth®

TABLETS
25 mg.—Packet of 12, vial of 25, bottles of 100 and 1000. 50 mg.—Bottles of 100 and 1000. 100 mg.—Bottles of 100 and 1000.

SYRUP
6.25 mg. per cc.—Pints and gallons.

CREAM
Contains Neohetramine 2%—Tubes of 1 oz.

Wyeth Incorporated • Philadelphia 3, Pa.



Dehydrocholic Acid:
for a flushing effect upon the bile passages.

Bilein:
for an effective concentration of bile salts.

Hydro-●-Bilein®

(BILEIN® AND DEHYDROCHOLIC ACID, ABBOTT)

Effective alone · · · better together

You have prescribed dehydrocholic acid. You have prescribed the natural bile salts. Now, for greater effectiveness, for a wider range of therapy, both are combined in a single preparation, HYDRO-BILEIN. Each tablet contains 2 grs. dehydrocholic acid and 2 grs. dried fresh ox bile. Administered in this form, their separate functions complement each other—the one sluicing out inspissated bile or products of inflammation, the other stimulating the production of bile solids which aid in the absorption of fat and fat-soluble vitamins. Together they facilitate gall bladder emptying and increase intestinal motility.

The average dose is one tablet two to four times daily, preferably after meals. Dosage may be reduced if it produces an undesired laxative effect. Your pharmacy has HYDRO-BILEIN in bottles of 100 and 1000 sugar-coated tablets. Abbott

"...completely amenable to cure"

"Vitamin deficiency diseases . . . with the exception of a few extreme instances are completely amenable to cure."*

When a vitamin deficiency state exists—as may be the case in old age, with restricted diets, during convalescence, certain chronic illnesses, pregnancy—intensive vitamin therapy may be effectively instituted with

PLURAXIN®

SPECIAL THERAPEUTIC FORMULA

High Potency Multiple Vitamin Capsules:

Vitamin A	25,000 units
Vitamin B_1 (thiamine)	15 mg.
Vitamin B_2 (riboflavin)	10 mg.
Vitamin B_6 (pyridoxine)	2 mg.
Calcium pantothenate	10 mg.
Nicotinamide	150 mg.
Vitamin C (ascorbic acid)	150 mg.
Vitamin D_2 (calciferol)	1,000 units

One or two capsules of PLURAXIN *daily usually suffice*

Available in bottles of 30 and 100 capsules. Also same formula with folic acid (5 mg. per capsule) in bottles of 30 and 100.

*Wilbur, D. L.: Principles in the Use of Vitamins in Treatment: I. Vitamin Deficiency Diseases. Gastroenterology, 1:179, Feb., 1943.

Winthrop-Stearns INC.
NEW YORK, N. Y. WINDSOR, ONT.

PLURAXIN, trademark reg. U. S. & Canada

For prompt relief and healing of burns–Chloresium Therapy

Clinical experience proves value of Chloresium chlorophyll preparations in the treatment of burns

From American Journal of Surgery, Jan., 1947—"Two patients were admitted with extensive and severely infected second and third degree burns of the head and both hands. The most severely burned hand in one case and the better hand in the other case were treated with continuous wet dressings of chlorophyll, Chloresium Solution (Plain), while the other hands were treated with boric solution . . .

"In both cases . . . the patients volunteered that the chlorophyll-treated hand was more comfortable. The chlorophyll hands produced granulations of better quality and more rapidly... In both cases, the final result after grafting has been better in the chlorophyll-treated hands."

From the Guthrie Clinic Bulletin, Jan., 1947—"Those (burn) patients who received Chloresium in the initial treatment showed the greatest beneficial effects. It was noticed that healing seemed to occur faster under chlorophyll therapy (*Chloresium*) than when other substances such as vaseline were used. In addition, secondary infection was kept at a minimum. In several cases having bilateral involvement of extremities, one extremity was used as a control and treated with vaseline while the other extremity was dressed with Chloresium Ointment. In each, the part treated with the water-soluble chlorophyll (*Chloresium*) healed more rapidly and with less infection than the control."

Chloresium

SOLUTION (PLAIN); OINTMENT; NASAL AND AEROSOL SOLUTION

Ethically promoted—at leading drugstores

U. S. Pat. 2,120,667—Other Pats. Pend.

From Archives of Dermatology and Syphilology, March, 1948—"In 5 patients with chemical burns and sunburn, the water-soluble chlorophyll cream (Chloresium Ointment) was amazingly healing and soothing to the injured epithelium."

From American Journal of Surgery, Oct., 1945—"It has been shown rather conclusively that, of all the agents at present available for the stimulation of cell proliferation and tissue repair, chlorophyll (*Chloresium*) probably has the most constant and marked effect."

WHENEVER TISSUE HEALING IS A PROBLEM

Not only in burns, but also in wounds, ulcers and dermatoses—reports in more than 1150 published clinical cases show the majority of cases respond rapidly to treatment with Chloresium Solution (Plain) or Ointment.

These gratifying results are due to the therapeutic action of the *water-soluble derivatives of chlorophyll*. They are natural nontoxic biogenic agents which accelerate normal cell regeneration, thus measurably hastening the healing process. At the same time, they help control superficial infection, provide symptomatic relief and deodorize foul-smelling suppurative conditions.

Try Chloresium on your next burn case—or any other case where faster healing or deodorization is desired. It is completely nontoxic, bland and soothing.

FREE—CLINICAL SAMPLES

RYSTAN CO., INC., Dept. IM-5
7 N. MacQuesten Pkwy., Mt. Vernon, N. Y.

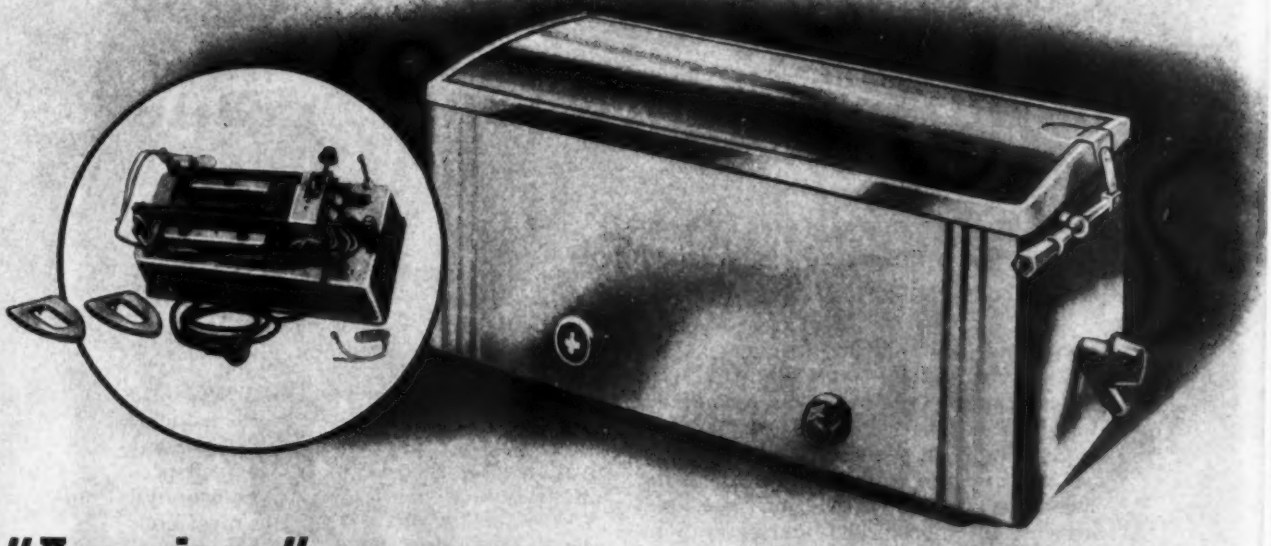
I want to try Chloresium. Please send me clinical samples, without obligation.

*Dr.*_____

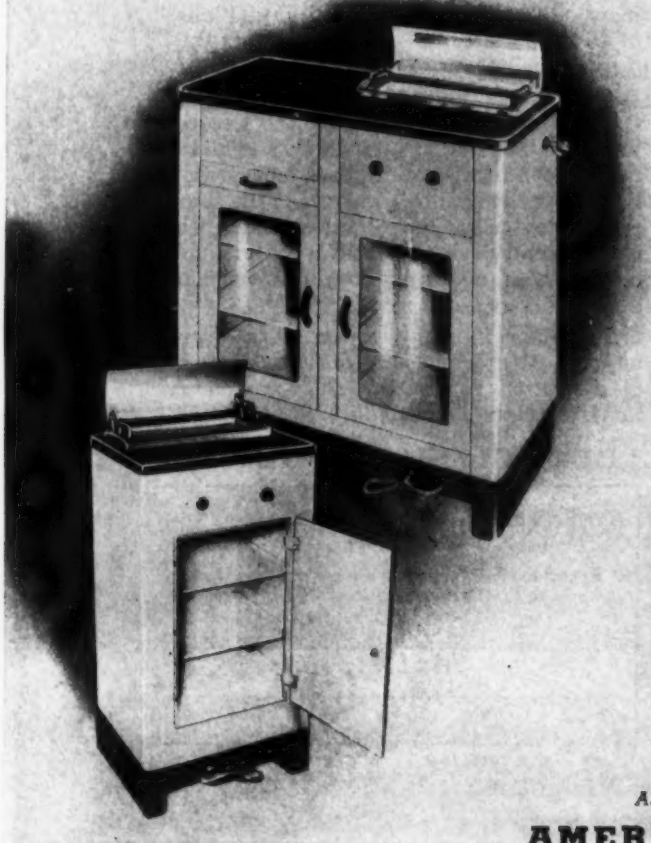
*Address*_____

*City*_____ *Zone*____ *State*_____

Buy with an eye on SERVICE



"American"
SMALL INSTRUMENT STERILIZERS



are automatically burn-out-proof . . . another widely acclaimed feature that assures long, satisfactory life of the unit and constant protection for immersed instruments. IF WATER BECOMES EXHAUSTED beyond a critical level, permanent cut-off of electric current occurs automatically. Operation can only be resumed by replenishing water in the chamber and manually switching on current again.

These superior Small Instrument Sterilizers are ultra modern in every detail . . . designed and built to afford the precision performance provided by large "American" hospital sterilizers used the world over.

PORTABLE MODELS
available in three practical sizes.

SINGLE CABINET MODELS
constructed in three practical styles.

DOUBLE CABINET MODEL
offering ideal facilities for centralizing and office or clinic Sterile Supply.

ASK YOUR DEALER or write us for further information

AMERICAN STERILIZER COMPANY
Erie, Pennsylvania

Ease Your Work . . . Please Your Patients

with Curity REG. U.S. PAT. OFF. Adhesive

Here's why you and your patients will prefer CURITY Adhesive.

Its special cloth backing gives it more "body"—makes it easier to handle, helps it go on more smoothly and lie flat (see actual photo). What's more, that same special cloth reduces stretching, which means less frequent retaping . . . less tape used.

And over ten years of experimentation—over 15,000 skin tests—have proved CURITY Adhesive less irritating to the skin. It sticks instantly, stays on, gives more patient comfort.

See for yourself what a pleasure it is—for you *and* your patient—to use CURITY Adhesive.

A Product of

BAUER & BLACK

Division of The Kendall Company, Chicago 16

Curity REG. U.S. PAT. OFF.

RESEARCH TO IMPROVE TECHNIC . . . TO REDUCE COST

Doctor...

Here are two great spot tests that simplify urinalysis . . .

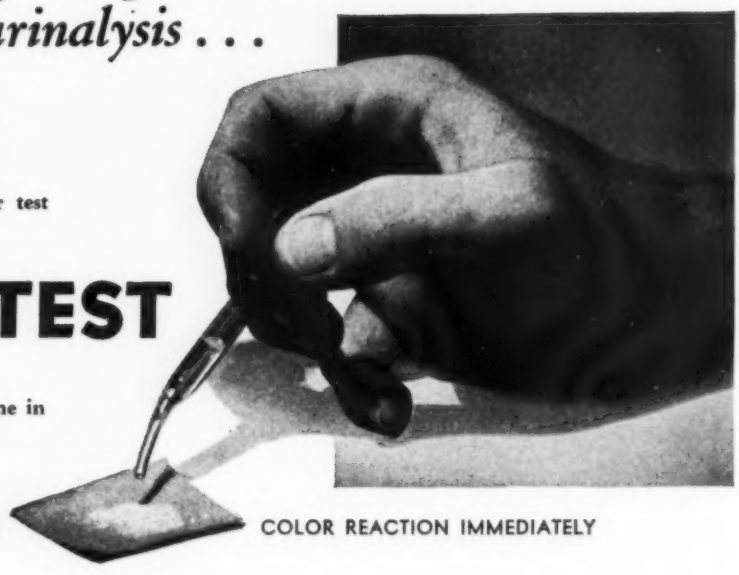
GALATEST

The simplest, fastest urine sugar test known.

ACETONE TEST

(DENCO)

For the rapid detection of Acetone in urine or in blood plasma.



A LITTLE POWDER . . .
A LITTLE URINE
COLOR REACTION IMMEDIATELY

Combination Kit: Contains both tests, a dropper and color chart. Available at all drugstores and surgical supply houses.

Galatest and Acetone Test (Denco) . . . . Spot Tests that require no special laboratory equipment, liquid reagents, or external sources of heat.

One or two drops of the specimen to be tested are dropped upon a little of the powder and a color reaction occurs immediately if acetone or reducing sugar is present. False positive reactions do not occur. Because of the simple technique required, error resulting from faulty procedure is eliminated.

Both tests are ideally suited for office use, laboratory, bedside, and "mass-testing." Millions of individual tests for urine sugar were carried out in Armed Forces induction and separation centers, and in Diabetes Detection Drives.

The speed, accuracy and economy of Galatest and Acetone Test (Denco) have been well established. Diabetics are easily taught the simple technique. Acetone Test (Denco) may also be used for the detection of blood plasma acetone.

Write for descriptive literature.

THE DENVER CHEMICAL MANUFACTURING CO., Inc.

163-7 VARICK STREET, NEW YORK 13, N. Y.

BIBLIOGRAPHY

Joslin, E. P., et al: Treatment of Diabetes Mellitus—8 Ed., Phila., Lea & Febiger, 1946—P. 241, 247.

Duncan, G. G., Carey, L. S. & Hudson, M. T.: Medical Clinics of North America—Phila., No., W. B. Saunders Co. Phila., 1949—P. 1338.

Lowsley, O. S. & Kirwin, T. J.: Clinical Urology—Vol. 1, 2 Ed., Balt., Williams & Wilkins, 1944—P. 31.

Duncan, G. G.: Diseases of Metabolism—2 Ed., Phila., W. B. Saunders Co., 1947—P. 735, 736, 737.

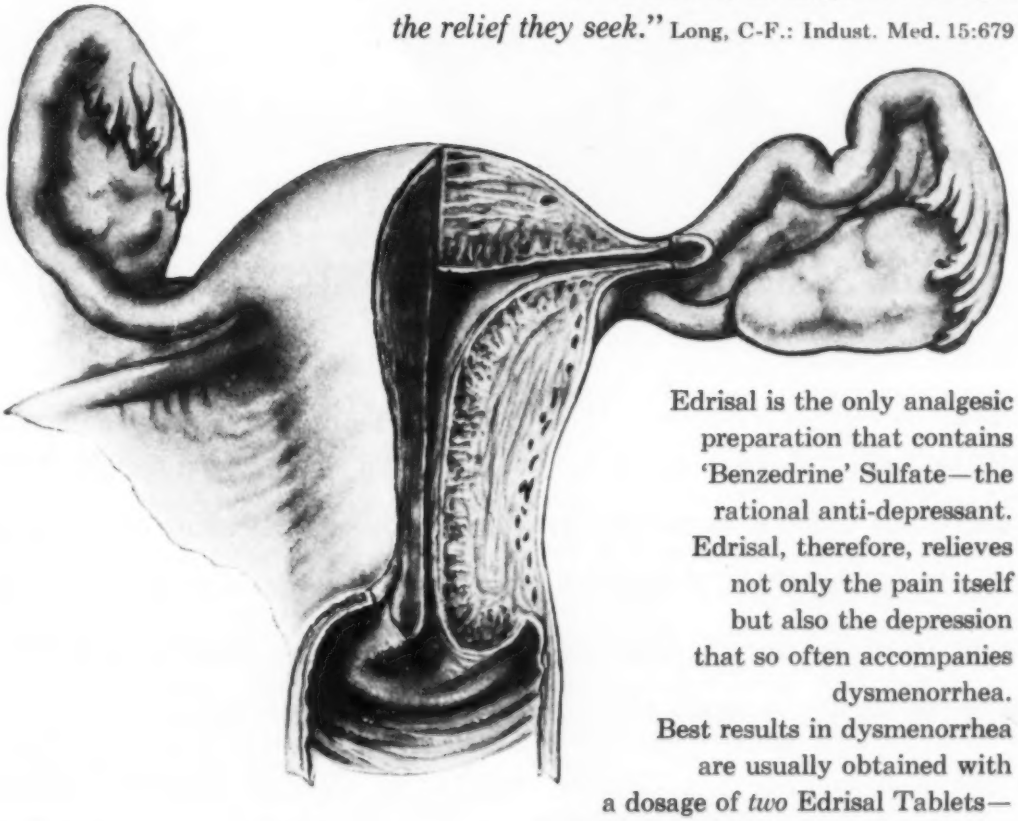
Guidotti, F. P. & Winer, J. H.: The Military Surgeon—Vol. 94, Feb., 1944, No. 2.

Bacon, Melvin: The Journal of The Maine Medical Assn.—Vol. 38, July, 1947, No. 7—P. 167.

Stanley, Phyllis: The American Journal of Medical Technology—Vol. 6, No. 6, Nov., 1940 and Vol. 9, No. 1, Jan., 1943.

~~dysmenorrhea~~

"We use [EDRISAL] *with the knowledge that 9 out of 10 sufferers will get the relief they seek."* Long, C-F.: Indust. Med. 15:679



Edrisal is the only analgesic preparation that contains 'Benzedrine' Sulfate—the rational anti-depressant. Edrisal, therefore, relieves not only the pain itself but also the depression that so often accompanies dysmenorrhea.

Best results in dysmenorrhea are usually obtained with a dosage of *two* Edrisal Tablets—repeated every three hours, if necessary.

Edrisal

Each Edrisal* tablet contains Benzedrine* Sulfate (racemic amphetamine sulfate, S.K.F.), 2.5 mg.; acetylsalicylic acid, 2.5 gr.; and phenacetin, 2.5 gr. *Available on prescription only.*

its dual action relieves pain, lifts mood

Smith, Kline & French Laboratories, Philadelphia

*'Benzedrine' and 'Edrisal' T.M. Reg. U.S. Pat. Off.

"Sweet is pleasure after pain"—as Dryden put it—might well be a description of the welcome relief from discomfort which is bestowed upon injured skin or the mucosa of the genito-urinary and rectal areas by 'Surfacaine' (Cyclomethycaine, Lilly). A single topical application usually produces anesthesia lasting up to eight hours. Its low toxicity, however, permits more frequent use in extremely severe conditions. Available in a wide variety of effective forms:

OINTMENT • CREAM • LOTION • SUPPOSITORIES

SURFACAINE

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U. S. A.

Complete literature on 'Surfacaine' is available from your Lilly medical service representative or will be forwarded upon request.

INDUSTRIAL MEDICINE AND SURGERY

Volume 19 MAY 1950 *Number 5*

Periodic Health Examination of Executives

S. CHARLES FRANCO, M.D.,
Consolidated Edison Company of New York, Inc.,
New York City

THE Consolidated Edison Company of New York inaugurated Periodic Health Examination for its executive personnel on January 1, 1949, as part of a preventive medical program to maintain optimum health. A survey of the work accomplished the first year has revealed interesting findings and attests to the merit of such a health maintenance program.

Introduction

THE plan is voluntary and jointly contributory. Among other benefits, it offers an annual health examination. This periodic examination was accomplished on 307 members, or 35% of the eligible executives. Based on the number of new examinations in the first quarter of this year, it is anticipated that 120 additional persons will be examined this year; 50% of the group.

The basic medical policy is that these examinations are confidential in nature, as otherwise pertinent details in the medical history cannot be elicited, and a complete clinical evaluation of the patient cannot be obtained. Each individual is assigned a serial number so that any diagnosis or laboratory report cannot be identified with the person examined. In situations where the health of the individual is a concern to management, it is only with the individual's consent and in his interest that the physician makes general recommendations to management. The confidential information is never revealed.

The prime purpose of the Periodic Health Examination is the maintenance of optimum health and peak efficiency by the prevention and early detection of disease. From the onset, it was decided that an individualized approach would be used in each case, rather than the "dragnet method" whereby many laboratory tests are undertaken routinely. It was believed that this individualized approach would give a better clinical appraisal of each person and would reduce the time and cost factor which would become an obstacle in the performance of periodic examinations if too many procedures were accomplished routinely. At the original visit a detailed history and physical examination are accomplished, and blood is obtained for the desired laboratory tests. In the interval to the re-visit examination, the routine electrocardiogram and indicated laboratory studies are completed. At the re-visit all the laboratory studies are correlated; fluoroscopy of the heart and lung and funduscopic examination are accomplished. Finally the findings are discussed with the individual from the point of view of health counselling. In the annual re-examination, one visit of three-quarters of an hour covers the complete examination.

In the second year of the program it has often been possible to accomplish the new examinations in one session of approximately one hour.

Method of Examination

1. HISTORY: A careful history is the cornerstone of the individualized approach to the Periodic Health Examination. A review of the previous medical history necessitates specific questioning about rheumatic fever, repeated attacks of pneumonia, recurrent respiratory infections, previous functional disturbance, and allergy as manifested by hay-fever, asthma, drug and food reactions.

We are particularly impressed by the role of habits in health and disease. The habit history is checked for gain in weight and its association with increased caloric intake. This is often a precursor of hypertension and, at times, of diabetes mellitus. Over-indulgence in coffee and tobacco, and in alcohol, can be a cause of functional disturbance. Discreet questioning into personal and family life and business relations allows the formation of judgment as to the psychological reaction of the individual concerned.

No attempt is made to delve into deeper personal situations.

A review of the family history is an important factor in determining the individualized laboratory studies that should be selected for further investigation in a preventive medical program. Diabetes mellitus, gout, obesity, and pernicious anemia are checked by specific questioning even as involving close relatives as well as the immediate family. A history of gastric carcinoma would necessitate gastric analysis with special reference to the presence of free hydrochloric acid. A family history of cancer of the rectum, or colon, or polyps of these organs is an indication for proctoscopy and barium enema. The existence of hypertension, coronary artery disease, and arteriosclerosis in certain family groups is recognized.

Presented at the Thirty-Fifth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Chicago, April 27, 1950.

CHART I.

Age Group	Number Examined — Total	Number Without Any Defects	Number Showing Minor Conditions	Number Showing Major Conditions	Number "Normal"
25-29	1	0	1	—	1
30-34	—	0	—	—	—
35-39	4	0	2	2	2
40-44	45	14	23	14	33
45-49	88	25	35	34	51
50-54	87	14	37	47	38
55-59	43	6	13	26	15
60-64	36	4	12	24	9
65-69	2	0	1	1	1
70	1	0	—	1	—
Totals	307	63 (20.5%)	124 (40.3%)	149 (48.5%)	150 (48.8%)

2. PHYSICAL EXAMINATION: A careful physical examination is dependent upon clinical acumen. A personality evaluation can be arrived at from the individual reaction during the history and the physical examination. In this age group, which is dominantly over 40 years of age, the main efforts on physical examination are directed to the early diagnosis of pathological arterial changes and to the discovery of precursors of malignancy or incipient malignancy.

The discovery of early signs of aortic arteriosclerosis is possible by careful attention to the aortic valve area in the erect posture and in full expiration. In over 80% of such cases, the presence of an aortic systolic murmur provided the first clue. The soft apical systolic murmur may be the earliest clinical manifestation of the findings to be elicited later at the aortic valve area. A protodiastolic gallop rhythm at the apex may be the only clue to a silent myocardial infarction from coronary sclerosis. The evaluation of hypertension depends on the associated findings in the heart, aorta, and the peripheral arteries. In the presence of hypertension, the signs of aortic arch sclerosis point to advanced changes that assume clinical significance particularly in the fourth and early half of the fifth decade. Examination of the optic fundi will reveal little in most cases of hypertension until a serious complication is evident. Tortuous brachial arteries can be misleading. When arterial pulsation is not elicited in the feet, studies by the oscillometer may be necessary to evaluate the patency of arteries.

Rectal examination discovered one case of unrecognized carcinoma of the rectum in this series. The origin of prostatic cancer elsewhere than in the posterior lobe is unusual, so that rectal examination should uncover the vast majority of such cases.

The physical findings of an allergic state may range from dermatitis, or vasomotor rhinitis, to the full signs of asthma. The vital capacity is checked in cases of emphysema, chronic bronchitis, asthma and heart disease.

Fluoroscopy of the heart and lungs is accomplished routinely. One bronchiogenic carcinoma was discovered by the presence of a mediastinal mass. One case of localized cystic disease of the lung was noted and an acute spontaneous pneumothorax was confirmed. Fluoroscopy is useful in evaluating the changes in the aortic arch due to

CHART II.
CONDITIONS DISCOVERED BY PERIODIC EXAMINATION

ALLERGY: (6)
- Allergic Dermatitis—2
- Vasomotor Rhinitis & Bronchitis—2
- Angioneurotic Edema & Asthma—1
- Asthmatic Bronchitis—1

BONE & JOINTS: (7)
- Paget's Disease—1 Gout—5
- Hypertrophic Arthritis of Hip—1

BRONCHO-PULMONARY: (2)
- Acute Pneumothorax—1
- Cyst of the Lung—1

CARDIOVASCULAR: (42)
- Hypertension (6)
  - Arteriosclerotic with symptoms—2
  - Arteriosclerotic without symptoms—3
  - Essential Hypertension—1
- Arteriosclerosis of Aorta without Hypertension (19)
- Coronary Thrombosis (3)
  - Acute—2
  - Old—1
- Myocardial Damage (4) (only on EXG)
- Bundle Branch Block (5) (only on EKG)
- Rheumatic Heart Disease (2)
- Auricular Fibrillation (2)
  - one in RHD: one—non-pathological
- Dextroposition of Aorta (1)

ENDOCRINE: (5)
- Diabetes Mellitus—2
- Subthyroid—3

GASTRO-INTESTINAL: (4)
- Duodenal Ulcer—1
- Achlorhydria—2 (both in P.A. families)
- Acute Diverticulitis—1

GENITO-URINARY: (4)
- Chronic Nephritis—1
- Bladder Neck Stricture—1
- Non-functioning left kidney with calculi—1

METABOLIC DISORDER: (22)
- Obesity (moderate: only two severe)
  - Elevated Uric Acid—17
  - Normal Uric Acid—5

NEUROPSYCHIATRIC: (2)
- Neurodermatitis—1
- Psychoneurosis—1

TUMORS: (3)
- Bronchiogenic Carcinoma—1
- Carcinoma of Rectum—1
- Polyp of Sigmoid—1

MISCELLANEOUS: (2)
- Glaucoma—1
- Chronic Mastoiditis—1

TOTAL: 99 Medical Conditions
81 Major Diagnoses (54% of total)
11 Minor Diagnoses

CHART III.
MAJOR MEDICAL CONDITIONS

	184 Specific Diagnoses	in 149 Persons			
BRONCHO-PULMONARY	8	(4.3%)	GASTRO-INTESTINAL	19	(10%)
Allergic Rhinitis	1		Acute Diverticulitis	1	
Asthmatic Bronchitis	1		Carcinoma Rectum	1	
Bronchial Asthma	1		Chronic Cholecystitis	2	
Bronchiogenic Carcinoma	1		Duodenal Ulcer (Active)	5	
Chronic Bronchitis	1		Functional Indigestion	6	
Emphysema	1		Spastic Colitis	4	
Spontaneous Pneumothorax	1		GENITO-URINARY	2	
CARDIOVASCULAR	67	(36%)	Chronic Nephritis	1	
Aortitis, Arterio & Hypertension	19		Stricture Bladder Neck	1	
Arteriosclerosis Generalis	3		MUSCULO-SKELETAL	20	(10%)
Auricular Fibrillation	1		Arthritis, Chr. Infect.	1	
Coronary Sclerosis	3		Arthritis, Hypertrophic	1	
Coronary Thrombosis	3		Arthritis, Traumatic	1	
Heart Block; Bundle-Branch	5		Bursitis, Deltoid	2	
Hypertension, Arteriosclerotic	12		Fracture, Metatarsal	1	
Hypertension, Essential	9		Gout	7	
Hypertensive Heart Disease	3		Hernia, Ind. Ing.	1	
Myocarditis, Chronic-Compensated	3		Myositis	1	
Paroxysmal Tachycardia	1		Paget's Disease	1	
Rheumatic Heart Disease	5		Periarthritis	1	
CENTRAL NERVOUS	11	(5.9%)	Ruptured Intervet. Disc	3	
Anxiety Neurosis	5		DISABILITY	18	(13%)
Neurodermatitis	2		Physical Restriction	15	
Psychoneurosis	4		Retired for Disability (Coronary Disease—3)	3	
ENDOCRINE	57	(39%)			
Diabetes Mellitus	6		DEATHS		
Hypothyroid	3		Bronchiogenic Carcinoma	1	
Non-Toxic Adenoma	1		Coronary Thrombosis	1	
Obesity	47	(25%)			

arteriosclerosis. It is recognized that the diameter of the aortic arch has a wide variation normally in the various age groups[1]; but marked dilatation and elongation are considered abnormal.

While physical signs were present in 80% of cases with arteriosclerosis of the aorta, fluoroscopy demonstrating marked dilatation and elongation of the aortic arch was the only finding in 20% of the cases.

3. ELECTROCARDIOGRAPHY: The shortcomings of the electrocardiogram need no comment here, but experience has proved it to be a valuable part of the periodic examination. The routine electrocardiogram revealed four cases of unsuspected myocardial damage and five cases of bundle-branch block. Two of the latter subsequently developed coronary thrombosis within six months.

It is apparent that a normal electrocardiogram does not necessarily exclude coronary disease. Two additional tests have been developed in response to the need for some means of measuring the adequacy of the coronary circulation. One is the "Anoxemia Test" in which the subject breathes a low oxygen concentration, and the other is the "Exercise Test" devised by Dr. A. M. Master.[2] Because of the occasional fatality reported with the "Anoxemia Test," our efforts have been confined to the "Exercise Test." This standard "Two-Step" exercise test is reported by Dr. Master to produce abnormal changes in the electrocardiogram in coronary insufficiency. Compared with a normal control electrocardiogram, a depression of the RST segment of over 0.5 mm. in any lead or various changes in the T-wave is a positive result and does not occur in healthy persons. This "Exercise Test" has also proved to be inadequate; but we have been advised by Dr. Master that by performing double the standard exercise, a greatly increased number of cases of coronary insufficiency has been uncovered. In the second year of this program, a routine ballistocardiogram has been included in an attempt to discover early cases of myocardial insufficiency.

CHART IV.
MINOR MEDICAL CONDITIONS
(124 Cases—176 Diagnoses)

MOST FREQUENT DIAGNOSES: (62%)

Allergic Conditions	(27)	Musculo-Skeletal	(24)
Allergic Rhinitis	11	Hernia	11
Hay-fever	8	Bursitis	4
Bronchial Asthma	1	Myositis	3
Allergic Dermatitis	4	Hypertrophic Arthritis	3
Urticaria	2	Gout	3
Angioneurotic Edema	1		
Functional Disorder	(27)	Obesity	(21)
Anxiety Neurosis	13		
Esophageal Spasm	4	Hemorrhoids	(6)
Functional Indigestion	2		
Spastic Colon	6	Transient Hypertension	(5)
Neurodermatitis	1		
Pruritus Ani	1		

CHART V.
OBESITY
A STUDY OF 47 CASES

GROUP I (26 Cases) — (Elevated Blood Uric Acid (Plasma)

(Pathology

Age 40—44 = 3
45—49 = 6
50—54 = 7
55—59 = 5
60—64 = 5

Pathology 13—Hypertension { Transient 4; Essential 2; Arteriosclerotic 7

5—Arteriosclerosis of Aorta without Hypertension
4—Myocardial Damage (2—old Thrombosis)
4—Fatty Liver (Enlarged)
1—Hypertrophic Arthritis
1—Diabetes Mellitus
3—Gout

Blood Uric Acid Mgs per 100 cc. Plasma	Blood Cholesterol
4.5—4.9 = 7	over 300 mgs. = 3
5—5.9 = 10	281—300 mgs = 4
6—6.9 = 7	200—280 mgs = 19
7—7.9 = 1	
8— — = 1	

Basal Metabolism (20 Cases)
Plus 10 to Minus 10 = 17
Plus 12 and Plus 30 = 2
Minus 20 = 1

GROUP II (9 Cases) — (Elevated Blood Uric Acid
(No Pathology

Blood Uric Acid = 4.6 to 7.2 mgm
Blood Cholesterol = 189 to 264 mgm

GROUP III (12 Cases) — Normal Uric Acid

Blood Uric Acid — 3.1 to 4.3 mgm
Blood Cholesterol — 200 to 287 mgm

Pathology—(6 Cases)

Diabetes Mellitus	1
Fatty Liver	1
Arteriosclerosis of Aorta without Hypertension	4

4. LABORATORY TESTS: These are kept to a minimum unless definite indications are elicited in the history or uncovered in the physical examination. Routine tests include urine, blood serological examination, and a blood sedimentation index. A blood count is not accomplished unless indicated by physical findings such as a pallor, enlarged lymph glands or spleen, or a family history of pernicious anemia.

Blood chemistry is not taken routinely. In those with a family history of diabetes mellitus or physical findings of moderate to severe obesity, a modified blood sugar tolerance test is accomplished by obtaining a blood sugar determination one and one-half hours after a carbohydrate type of breakfast. According to Wilkerson and Krall,[3] any reading over 170 mgm., which is the upper limit of a normal, should be checked by a regular sugar tolerance test. This method uncovered two cases of diabetes mellitus in moderately obese individuals. Blood urea nitrogen, and at times creatinine, are checked in cases of hypertension or where renal pathology is found on urine examination. Urea clearance tests are limited to those cases of known or suspected renal pathology. Blood uric acid and cholesterol are checked as part of a metabolic study in a group of patients exhibiting obesity and signs of arterial disease and hypertension, or a family history of vascular disease.[4] The findings in this group are discussed later.

The basal metabolism was studied mainly in the group of cases whose metabolism was investigated because of obesity and arterial changes as noted above. It was found to be usually in the normal range. In a few individuals, a low metabolic rate was an expression of a "fatigue state" due to functional disorder. No case of myxedema was discovered in this group.

Gastric analysis is accomplished in those individuals having a family history of carcinoma of the stomach, pernicious anemia, or achlorhydria. It is performed in persons with long-standing gastric complaints and negative gastro-intestinal x-ray studies. An achlorhydria in such persons might be associated with atrophic gastritis and would indicate the need for further study by gastroscopy. A gastric analysis should be checked in patients with mucous colitis or recurrent hives. In each case the presence of free

CHART VI.
CORRELATION WITH FAMILY HISTORY
(210 Cases (68.4%) had Record of Clinically Important Disease)

I. Cardiovascular Disease (Coronary or Hypertensive)
Positive Family History—68 (32.38%)
Cardiovascular Disease— 18 (30% of Major CV Disease)

Arteriosclerosis of Aorta	2
Arteriosclerosis Obliterans	1
Coronary Sclerosis	1
Hypertension, Arteriosclerotic	6
Hypertension, Essential	5
Hypertension, Transient	1
Hypertensive Heart Disease	2

II. Diabetes Mellitus
Positive Family History—42 (20%)
Diabetes Mellitus—4 (60% of Cases Listed)
Blood Sugar Determinations—35 Cases—2 Abnormal

III. Gastric Carcinoma
Positive Family History—10 (4.7%)
Gastric Cancer—0
Gastric Analysis—None with Achlorhydria

IV. Carcinoma of Colon and Rectum
Positive Family History—16 (7.6%)
Polyp of Recto-Sigmoid (Benign)—1

V. Pernicious Anemia
Positive Family History—5 (2.3%)
Achlorhydria—2 (Gastric Analysis—5)

VI. Gout
Positive Family History—3 (1.4%)
Clinical Gout—1

hydrochloric acid is determined by the histamine test. The presence of achlorhydria is recommended as a basis for effective selection of persons in whom the incidence of carcinoma would be greater than in the general population. Rigler[5] has reported the value of routine x-ray examination of the stomach in a selected group of patients over 50 years of age, with no particular gastric symptoms and who showed either achlorhydria or free hydrochloric acid of less than 30 units. There were 10 persons with a family history of gastric carcinoma. None had achlorhydria after the histamine test meal. In five persons there was a family history of pernicious anemia. Achlorhydria after the histamine test was discovered in two individuals of this group.

Stool examination is accomplished in cases with a history of colonic dysfunction such as colitis or with previous bowel infection such as amebiasis.

Routine proctoscopy has been recommended in the physical examination of adult patients for the detection of malignant and pre-malignant lesions.[6] In our examinations, proctoscopy is performed only for specific indications. Any patient with rectal bleeding, change in bowel function, or unexplained abdominal pain is proctoscoped and a barium enema x-ray is also performed in a large percentage. A family history of cancer of the rectum or bowel is an indication for proctoscopic examination and is followed by routine barium enema x-ray. In 16 such persons, proctoscopy revealed one case with a small sessile polyp of the rectosigmoid. This could not be visualized by barium enema x-ray. It was treated with fulguration by a consulting surgeon.

5. X-RAY EXAMINATION: X-ray of the chest is accomplished only in those with pulmonary complaints or physical findings. The limitations of fluoroscopy in detecting parenchymal lesions are well known. However, no case of chest disease was uncovered by x-ray which had not been discovered by fluoroscopy.

Gastro-intestinal x-ray study is undertaken in the following instances. A recent gastro-intestinal complaint of a definite nature or a change in a chronic gastric history is an indication for such a study. Some cases with exacerbation of ulcer symptoms are re-checked by x-ray. Routine gastro-intestinal x-ray is accomplished in those persons over 50 years of age who have a family history of gastric carcinoma or pernicious anemia and who have achlorhydria by the histamine test.

Barium enema x-ray is checked when indication of colonic disease is elicited in the history or physical examination. Proctoscopy always precedes the colon x-ray and provides the only proper method of examination of the rectum and rectosigmoid area.

Gall-bladder x-rays are done only when indicated by history. No case of cholecystitis was discovered solely by x-ray.

6. ALLERGY TESTS: Skin sensitization tests are checked when the history or examination points to an allergic factor, such as asthma, hives, or chronic dermatitis. These tests have marked limitations in detecting food allergy and an elimination diet may be the only means of determining the specific food allergen.

Health Counselling

AT THE termination of the examination, the significance of the findings is discussed with each person. The individual's responsibility in the maintenance of health is stressed. The value of self-discipline as the keystone of good health is emphasized. Correction of dietary habits and overindulgence in tobacco, coffee, and alcohol is attempted. The problem of obesity, even when moderate, is tackled vigorously, particularly in those cases whose metabolic study has disclosed an elevated blood uric test.

Health counselling should cover the prophylactic elements in mental hygiene. In the patient whose symptoms are due to a tension state, an attempt is made to teach him to be more philosophic about life and his own situation. Similarly, the "fireball" is given advice about mental and physical relaxation and the delegation of responsibility. The industrial physician should be particularly conscious of the deleterious effect of incorrect mental attitudes on industrial relations.

The individuals with organic disease are taught to live within their limitations. Only three persons in this group were retired for physical disability. In those with early signs of organic disease, such as asymptomatic arteriosclerosis of the aorta arch, the specific disease is not mentioned but the main effort is placed on correction of personal habits and limitation of unusual physical effort as might apply to their particular age group. A psychoneurosis can be developed in such cases and its symptoms can be more disabling than the organic disease we are trying to correct.

Statistical Analysis

A STATISTICAL analysis of the results of the Periodic Examination Program can be visualized in the charts.

From Chart I we find that only 63 persons (20%) of the total group examined are free of any defects of a minor or major nature. A major condition is one that severely affects health and need not necessarily be related to the specific diagnosis itself. From the practical point of view the minor defects in most cases were minimal and in no way interfered with health. By including these minor defects with the number free from any defect, a total of 150 persons (48.8%) could be classified as normal.

Chart II lists the medical conditions discovered by periodic examination. Major conditions were found in a little more than 25% of the persons examined and accounted for 54% of the total

major diagnoses. This may be due to the fact that in the first year of any periodic examination program many more conditions are uncovered than in a subsequent yearly re-examination. More than one-half of the medical conditions involved the cardiovascular system. Three tumors, only one of which was benign, were uncovered.

Chart III summarizes the 184 major diagnoses among 149 persons. Cardiovascular involvement occurred in 36% and this was due almost entirely to hypertension and arteriosclerosis of major vessels such as the aorta and the coronary arteries. Forty-seven cases of obesity are listed, and one-half of these will be found to be associated with similar cardiovascular defects. The relative low incidence of gastro-intestinal conditions is to be noted. The disability rate in this group is only 13%. Three persons were retired for physical disability, all due to coronary artery disease. Permanent restriction of physical activity was recommended in 15 persons, all for cardiovascular disease, but every one was able to carry on his regular duties in office work. One death occurred from acute coronary thrombosis in a known case of angina pectoris, and the other death was due to mediastinal obstruction from a bronchogenic carcinoma discovered in the periodic examination.

Among the minor medical conditions listed in Chart IV, the allergic and functional disorders are the most prominent. Obesity ranks higher than any other single diagnosis in this group.

Chart V summarizes the study of 47 cases of obesity of moderate degree. Two cases presented severe obesity. Almost 75% had an elevated uric acid in the blood plasma. Numerous controls have established the normal plasma uric acid at 3.5 to 4 mg. per 100 cc. of plasma. This usually averages 1 mg. less than the serum uric acid levels. More than 25% had elevation of blood cholesterol, considering 280 mg. as the upper limit of normal. The elevated blood cholesterol levels were not located solely in the group with cardiovascular complications. The basal metabolism determinations were essentially normal. The high percentage of cardiovascular pathology is to be noted, and even in Group III, with normal blood uric acid levels, those with arteriosclerosis of the aortic arch had uric acid readings over 4 mg. The follow-up examinations this year indicate that weight reduction by a low caloric diet of 1350 calories and only mild restriction of high purine foods has corrected the abnormality in blood uric acid and cholesterol. Improvement of some medical conditions has occurred. This study should not be construed as a determination of the causative factors in arteriosclerosis. It is a practical approach to the correction of obesity and associated pathological findings.

Chart VI lists the correlation of the family history with disease of certain systems. There appears to be a distinct correlation in the case of cardiovascular disease and diabetes mellitus.

Summary

THE Periodic Health Examination uncovered major medical conditions in 25% of the executives examined. These mainly involved the cardiovascular system. Obesity was another major finding and 50% of these had associated cardiovascular involvement. Experience with health counselling shows that these conditions can be prevented in many cases and greatly improved in others. This type of preventive medical program should prove an important factor in the control of these diseases which cripple useful working life. Preventive medical techniques are the best means of reducing the rising cost of medical care which is now mainly expended for curative medical facilities.

References

1. Clinical Roentgenology of the Heart. SCHWEDEL, J. B.: 184-203, 3rd Print, Paul B. Hoeber, Inc., 1948.
2. MASTER, A. M., NUZIE, S., BROWN, R. C., PARKER, R. C.: "The Electrocardiogram and the Two Step Exercise." *Am. J. Med. Sc.*, 207: 435, April, 1944.
3. WILKERSON, H. L. C., and KRALL, L. P.: "Diabetes in a New England Town." *J.A.M.A.*, 135: 209, (September 27) 1947.
4. ALDERSBERG, D., PARETS, A. D., and BOAS, E. P.: "Genetics of Arteriosclerosis." *J.A.M.A.*, 141: 246, (September 24) 1949.
5. RIGLER, L. G.: "Roentgen Examination of the Stomach in Symptomless Persons." *J.A.M.A.*, 137: 1501, (August 21) 1948.
6. SWINTON, H. W., HARE, H. F., and MEISSNER, W. A.: "Diagnosis of Cancer of the Large Bowel." *J.A.M.A.*, 140: 463-468, (June 4) 1949.

The Relative Infrequency of Occupational Dermatoses in Automobile Workers

JAMES R. ROGIN, M.D., and MARION W. JOCZ, M.D.,
Detroit, Michigan

THIS STUDY was undertaken in an effort to shed some light on the incidence of skin difficulties in automobile workers. It represents a year's experience in an automobile corporation, including 10 plants in the Detroit area, with approximately 76,000 employees (non-clerical).

There is a widespread general impression, not verified statistically, that skin disorders are a major and vital problem in industry in general, and in the automobile industry in particular. This impression has not been confirmed by our present study.

In a U. S. Public Health Service table headed "Yearly Prevalence of Occupational Dermatoses by Industries,"* 12 industries were studied. These included a total of 117,601 workers, of whom 72,000 were identified within automotive trades. This provided a good basis for comparison in our own study which involved approximately 76,000 workers. In the table mentioned, the percentage of occupational skin diseases in all workers in the 12 industries varied from 7.5% (highest), in 700 workers in synthetic resins, to 0.4% (lowest) in 72,000 automobile workers. An average of 1.2% of all workers in the 12 industries studied were affected with occupational dermatoses each year. Clerical workers were not included, nor were they included in our study.

Quoting further from Schwartz et al, page 27, "Fordyce states that occupational dermatoses constitute 2% of all skin diseases. C. Guy Lane states that they comprise from 4 to 5%. R. Prosser White furnished the figure as 6%; Gardiner places it at 7.5%. Oppenheim estimates that 20% of all skin diseases are of occupational origin, and states that occupational eczema is the most frequent of all skin diseases."

Our study revealed the following:

TABLE 1.

	Total	Non-Industrial	Industrial
All cases	340,290	139,522	200,768
Dermatoses	4,877	3,538 (A)	1,339 (B)
Percentage dermatoses of total cases seen	1.43%	2.53%	0.66%

TABLE 2.
DERMATOSES: PREVALENCE—1948

(A) Non-Industrial Dermatoses:	(B) Industrial Dermatoses:
— 1.04% of all cases	— 0.39% of all cases
— 2.53% of Industrial cases	— 0.66% of Industrial cases
— 73.0% of all Dermatoses	— 27.0% of all Dermatoses

Ratio: $\frac{\text{Industrial Dermatoses}}{\text{Non-Industrial Dermatoses}} = \frac{1}{2.7}$

The figure 0.66% of occupational dermatoses in 76,000 automobile workers is comparable to the 0.4% figure in the 72,000 automobile workers in the U. S. Public Health Service Table quoted previously.

These figures (0.66% and 0.4%) are strikingly low when compared to the incidence of dermatitis venenata, of all types, found in the private dermatological practice of one of the authors (J.R.R.). Of 2,400 new cases seen in one year, 6.8% were of dermatitis venenata of all origins. In other words, 10 times as many patients in the general population consulted a dermatologist for skin irritations of varied external origin, as did factory workers who are exposed, allegedly, to many known skin irritants in the course of their work.

Of the total number of dermatological cases seen (4,877) during the year in the entire factory population, only 274 (7%) were referred for dermatological consultation. This would indicate that in 93% of the dermatoses, the diagnosis was unequivocal, and both the diagnosis and therapy were easily handled by the non-dermatologically trained industrial physician. The 7% of cases seen by the dermatological consultant represented those cases in which the industrial physician could not establish the diagnosis himself, or, those in which the diagnosis was established, but which failed to respond quickly and readily to the dermatological and prophylactic therapeutic measures prescribed by the industrial physician.

Of the total number of cases seen by the dermatological consultant (274), 183 (66.7%) proved to be non-industrial in origin, and 91 (33.3%) were industrial in origin. This ratio of one industrial dermatosis to two cases of non-industrial origin compares readily to the ratio seen in the entire factory population. (Table 1—1,339 to 3,538 or 1:2.7.) In other words, only about one-third of all dermatological cases seen proved eventually to be of industrial origin.

Distribution of Lesions

LANE,[1] et al, in their comprehensive and valuable discussion, have estimated that cases of dermatitis of the hands make up 10% of all cases seen in dermatological practice. Tobias[2] estimated that over 50% of all occupational dermatoses affect the hands. Andrews and Barnes[3] have asserted that 35% of patients with dermatitis of the hands are not etiologically classifiable. In our present study, 90% of our cases of industrial dermatitis involved the hands, and/or the forearms. This would seem significant. In Detroit at least, in case an automobile worker should consult a physician for a skin disorder, and *if the lesions are not present on the hands*

From the Department of Dermatology, Wayne University Medical School, DR. LOREN W. SHAFFER, Professor, and the Chrysler Corporation, Diagnostic Division of Medical Department, DR. J. J. PRENDERGAST, Medical Director.

*In "Occupational Diseases of the Skin," by SCHWARTZ, TULIPAN and PECK, 2nd Edition, 1947, page 28.

or forearms, the chances are 90% that the skin difficulty is not of industrial origin.

Costs of Industrial Dermatitis

A "COMPENSATED" case is one in which the worker loses more than seven calendar days of work. In our present study, only nine dermatological cases fell into this classification during the year appraised. In the 76,000 workers, these nine cases represented only 1.2% of all the cases compensated for any medical reason whatever. The average number of days compensated in these nine dermatological cases was 18. The total compensation costs for these cases represented only 0.3% of all medical compensation costs for the year. The average cost for a compensated non-dermatological case was seven times that of a compensated dermatological case.

Further analysis regarding disability reveals the following interesting facts. Man-hours of exposure are estimated on the basis of an average working population of 76,000 multiplied by a 40-hour week. In our study, this meant that it took 80,000 man-hours of exposure to produce one case of industrial dermatosis, and *12,000,000 man-hours of exposure to produce one compensable case of industrial dermatosis!*

Etiology

SINCE 90% of the cases in our study involved the hands, it would seem worthwhile to review here some of the pertinent findings in hand dermatoses. The published studies on this topic are myriad in number, and no attempt will be made to make these comments comprehensive. Wise and Wolf[4] in their excellent summary classified recurring vesicular eruptions of the hands into two large groups :

1. Those constituting merely a localized portion of a disseminated or generalized vesicular or vesicobullous dermatosis, such as pemphigus, dermatitis herpetiformis, hydroa vacciniforme, erythema bullosum, etc.

2. Those prone to attack the hands as sites of predilection. The second group consists of the following eruptions:

(a) Those that are caused by contact of the hands with substances to which the skin is hypersensitive.

(b) Those resulting from fungus infection.

(c) Those referred to as "idiopathic," such as eczema manuum or nummular eczema of the hands, and cheiropompholyx.

(d) Those caused by chemical, mechanical or physical agents.

(e) Those which occasionally occur in the course of atopic dermatitis.

Sulzberger and Baer,[5] in their exhaustive study of the problem, classify hand eczemas etiologically as follows:

1. Those due principally to primary irritants.

2. Those due principally to eczematogenic allergens.

3. Eczematous primary fungous infections of the hands.

4. Eczematous secondary fungus eruptions, "Id" eruptions of the hands.

5. Eczematous and eczematoid hand eruptions attributed to ingested foods.

6. Eczematous and eczematoid eruptions attributed to inhalant allergens.

7. Local pyogenic infections.

8. Foci of infection in relation to hand eczema.

9. Hand eczema in relation to dyshidrosis and disturbances of sweating.

10. Drugs as agents eliciting eczematous eruptions of the hands.

11. "Nummular eczema" of the hands.

It would seem to us difficult to improve upon these classifications.

OUR cases, etiologically, when established as being industrial in origin, for the most part, were found to be due to primary irritants and/or eczematogenic allergens. These agents were, in 30% of the cases, insoluble cutting oils; in 30%, soluble, degreasing, and coolant oils; and, in 40%, a miscellaneous group caused by such chemicals as paint, turpentine, enamel, thinner, soaps, alkaline cleansers, rubber, brake fluid, rust preventive chemicals and processes, chrome-plating processes, etc. No attempt was made, in any of the cases, to determine whether a primary irritant or a sensitizer was the offending agent. If the patient failed to recover promptly with simple dermatological therapeutic measures while continuing at his usual job, and if patch tests yielded no clues as to the etiology of his eruption, it was found that the simplest and most effective therapy was to remove him from his job, and place him on one at which he could avoid his former contacts, or, at least, most of them. That this technique paid dividends is reflected in the statistics presented herewith, wherein can be noted the low incidence of industrial dermatitis in general, and, especially, the low incidence of disabling ("compensated") cases.

Summary and Conclusions

DERMATOSES constitute a minor problem among automobile workers.

2. Dermatoses of industrial origin account for only one-third of the total, and rate low in prevalence, severity, and cost.

Bibliography

1. LANE, C. G., ROCKWOOD, E. M., SAWYER, C. S., BLANK, I. H.: Dermatoses of Hands. *J.A.M.A.*, 128:987, (August), 1945.

2. TOBIAS, N.: Eruptions on Hands: Their Diagnosis and Treatment. *South. Med. J.*, 39:336, (April) 1946.

3. ANDREWS, G. C., and BARNES, M. C.: Pustular Bacterids and Allied Conditions. *South. Med. J.*, 34:1260, (December), 1941.

4. WISE, F., and WOLF, J.: Problems in Diagnosis and Treatment of Recurring Vesicular Eruptions of the Hands. *New York State Med. J.*, 40:1573, (November), 1940.

5. SULZBERGER, M. D., and BAER, RUDOLF L.: Eczematous Eruptions of the Hands. Year Book Dermatology & Syphilology, 7-43, 1948.

The First American Congress of Industrial Medicine
— Buenos Aires, December 1-14, 1949 —

WESLEY CINTRA COX, M.D., Dr. P.H., F.A.C.P., F.A.P.H.A.,
Colonel, Medical Corps, U.S.A.,
Commanding Officer, Army Industrial Hygiene Laboratory,
Washington, D. C.

THE interest of the democracies of the world in the social welfare of their citizens has markedly increased during the past decade. This is especially true of our sister republics of the Americas. In many of these countries, specific articles in various Federal Constitutions now set forth and guarantee the rights and privileges of the workers, their families, and the aged.

The preservation and maintenance of the health of the citizens have not been forgotten in these programs. The ministries of public health have been augmented, and the scope of the ministries has been increased and additional financial support provided. Departments and divisions of occupational health and industrial hygiene have been instituted, and active programs have been established and placed in operation. Governmental occupational health organizations for the personnel of the armed forces and their families and for Federal civilian employees and their families have been developed.

The interest of government in the health of the workers has resulted in the founding of national societies of industrial medicine, or of the medicine of sports and industry; and the enactment of new government ordinances or the publication of presidential decrees has resulted in the institution of intensified industrial medicine and hygiene programs in private industry.

The growth of industrial medicine and hygiene in the Republic of Argentina, highlighted as it has been by the holding of the First American Congress of Industrial Medicine in the capital city of Buenos Aires, December 1-14, 1949, is an outstanding example of accomplishments in the field of occupational health by the national health services of the countries of the Americas.

The Republic of Argentina occupies the relatively vast and exceptionally fertile plains of the southern half of the continent of South America, east of the main ridge of the Andes. Richly endowed by nature with practically all the natural basic resources for the development and furtherance of an agricultural economy, the populace of predominantly European stock has expressed its desire to modify and improve the economy of the country by the developing of domestic industries, transportation, public works and the natural resources of the domain. It has been estimated that this Republic, with a present population of approximately 16,500,000, can support 100,000,000 inhabitants.

A five-year plan was promulgated in 1947 which included reorganization of government departments and agencies, labor legislation, public health legislation, including industrial health, social insurance and other reorganizations and developments. Among the goals set were the following increases over levels for the year 1943: a 52% increase in wages actually paid, together with a 34% increase in employment; a 43% increase in the value of goods purchased; and a 50% increase in installed motive power.

In 1943 the President of the Republic of Argentina, General Juan Domingo Peron, then Coronel Peron, was appointed to the presidency of the National Department of Labor by the then president of the Republic. Later this Department was changed to an autonomous secretaryship with the title of Ministry of Labor and Planning. Coronel Peron was designated minister to this secretaryship, which he was until 1946 when he was inaugurated as President of his country. It was during the period of government service as Minister of Labor and Planning that President Peron advocated and successfully introduced the initial legislation which forms the framework of the present broad social-welfare program of the Republic. He was also responsible for the development and institution of the School of Public Health and Hygiene of the Argentine Army during the time he held the additional secretaryship of Minister of War.

Since being elected to the presidency, General Peron has frequently announced his program for the advancement of the welfare of the laboring man and the development of the dignity of labor through the preservation of the health of the worker, the maintenance of safe and hygienic working conditions and the payment of remuneration sufficient for the maintenance of an adequate standard of living by the worker and his family.

THE Argentine Society of the Medicine of Sports and of Industry was organized in 1935. The first national congress of this society was held in Buenos Aires in May, 1948.

Full governmental support was accorded and the American nations were invited to send representatives.

The Congress was eminently successful. The foreign delegates and the Argentine representatives were impressed with the urgent need for the promotion of a more effective liaison and better coordination of activities by the nations of America in the fields of occupational health, industrial medicine and hygiene and the ancillary specialties through the medium of their national societies and associations.

At the closing plenary session of the Congress, the invited representatives from the Republics of Brazil, Bolivia, Cuba, Chile, Paraguay, Uruguay and Venezuela, together with the Argentine delegates, passed resolutions founding the American Union of Industrial Medicine, elected officers and initiated the procedures necessary for the organization of the Union and the convocation of the First American Congress on Industrial Medicine the latter part of the calendar year 1949.

The preamble adopted at the closing meeting of the First Argentine Congress on Industrial Medicine is briefly summarized in English as follows:

"Industrial medicine is a scientific art of far-reaching social significance, engaged in the study of the problems associated with the hygiene, safety and well-being of the workers.

"The scientific labors of the specialists of America do not attain effective publicity owing to the lack of proper coordination and interchange of the results of experience and research.

"The nations of America may derive the greatest benefits by harmonious action, profiting by the experiences of each nation and the advice of civilian authorities and private enterprise, from the medical and legal standpoint, for the maintenance of the hygiene, safety and well-being of all classes of workers.

"Experience has amply demonstrated the advantage of the frequent and continuous exchange of information through the intermediary of a permanent organization which would coordinate the common activities; work for the creation of societies of industrial medicine in areas where none as yet exist, and organize and maintain an up-to-date archives and reference library as a source of information for interested doctors.

"The civil authorities should support the initiatives which contribute to scientific progress, which have an influence upon the working population and therefore also upon social tranquility.

"The exclusively scientific character of the American Union of Industrial Medicine will permit that organization to offer its disinterested advice in all possible manners, free of all improper influences."

The resolutions passed included the following:

"The designation of Professor Doctor Jose Pedro Reggi as Secretary General and the establishment of the Office of the American Union of Industrial Medicine in Buenos Aires.

"The creation of an Archives of Industrial Medicine and a library of American industrial medicine.

"The Republic of Argentina will contribute 50% of the monies required for the support of the Office of the Secretary General, and the other affiliated nations the remaining 50%.

"The delegates to the First Argentine Congress on Industrial Medicine desire to express their earnest request to the Ministers and Secretaries of Public Health, Labor and Planning, and Education and to the heads of the universities of the Nations of America to lend their illustrious support to the American Union of Industrial Medicine.

"Until such time as the Union may be able to publish an official organ, the publication of the Society of the Medicine of Sports and Industry of Argentina, entitled *The Medicine of Sports and of Industry*, will be considered the organ of the Union.

"The foundation of the American Union of Industrial Medicine was officially approved by the government. Thirty-two thousand pesos was appropriated by vote of the Argentine House of Representatives and the Senate for defrayment of the expenses of the First American Congress of Industrial Medicine. Upon approval by the President it became an official appropriation for the purpose designated."

THE First American Congress of Industrial Medicine was held in Buenos Aires, Argentina. Eighteen American countries and the Philippines were represented by officially designated delegations. The guests of honor who attended were Professor Thomas Edmond A. Stowell, Great Britain, President of the International Commission on Industrial Medicine, and Professor Luigi Carozzi, Switzerland, Secretary General of the International Commission of Industrial Medicine. The United States delegates were Colonel Wesley Cintra Cox, Medical Corps, U. S. Army, who represented the Department of the Army and the American Association of Industrial Physicians and Surgeons, and Colonel Charles H. Morehouse, U. S. Air Force, representing the Department of the Air Force.

The Congress was officially opened on the evening of December 1. The invocation ceremonies were held in the Aula Magna or great assembly hall of the Faculty of Law of the University of Buenos Aires. This building is an architectural masterpiece. The interior is most magnificently and artistically finished and furnished.

Addresses were made by Professor Doctor Jose Pedro Reggi, the President of the First American Congress on Industrial Medicine; the Minister of Health of the Republic of Argentina, Doctor Don Ramon Carrello; the Minister of Labor of the Republic of Argentina, Don Juan M. Freire; Professor Honorio Monteiro, Minister of Labor, Industry and Commerce of the Republic of Brazil; and Professor Luigi Carozzi, of Switzerland.

Plenary sessions and meetings of the 10 sections of the Congress were held from December 2 to 14, inclusive. The titles of the sections were as follows:

The Physiology of Human Labor.
Industrial Diseases and Industrial Toxicology.
Industrial Traumatology.
Professional Selection and Placement.
Industrial Legal Medicine.
Aviation Medicine.

Naval and Military Medicine.
Medical-Social Programs for the Worker.
Industrial Dentistry.
Optional industrial topics, including:
- Absenteeism.
- Industrial Health and Industrial Illness.
- The Industrial Diseases of Petroleum Workers.
- The Role of Selection and Placement in Increased Production.
- Industrial Blood Dyscrasias.
- Low Back Pain.
- Pneumoconiosis.
- The Atmosphere in Heavy Industry and Deep Mines.
- Industrial Diseases of the Rural Worker.

Approximately 200 prepared papers were presented which very adequately covered the fields of interest of the various sections and were indicative of the excellent industrial medical programs being developed throughout the Americas.

Professor Stowell presented two papers at the plenary sessions, one on "Lead Poisoning," the second entitled "The Modern Treatment of Varicose Veins." A thesis on "Tuberculosis" was read by Professor Luigi Carozzi. The British Commercial Attache presented a film entitled "The British Program for Rehabilitation and Placement of Handicapped Persons."

SENORA Dona Eva Maria Duarte Peron, the wife of the President of Argentina, addressed the Congress at a special plenary session. The subject of her discourse was "The Medico-Social Program in the Republic of Argentina." Senora Peron is a talented, forceful speaker, of gracious and magnetic personality. She graphically described the advances in medical-social aid and in social aid which had been accomplished since 1946 by the government and also the advances made under the auspices of the Eva Maria Duarte Peron Fundacion de Ayuda Social (Foundation of Social Service) in which there are now embraced in a single organization all of the national and local charitable organizations. The Fundacion, of which Senora Peron is the titular head and director, is supported by voluntary contributions from individuals and corporations. These programs are being carried out throughout the nation and include the construction of general hospitals, hospitals for special diseases such as tuberculosis, children's hospitals, preventoria, homes for orphaned children and for children both of whose parents are employed, institutions for the training of girls who with a poor social background might become wayward, institutes for medical research, and central blood banks. The government, with the assistance of the facilities of the Fundacion de Ayuda Social, is thus implementing the constitutional guaranties to its citizens of health, well-being, an improved cultural status and social security.

Through the kindness of Coronel Medico Carlos Carrillo Soto, Co-President of the Section of Military and Naval Medicine of the Congress, visits were made to civilian hospitals, medical-social and social aid institutions in the Federal City of Buenos Aires and to La Platte, the Capital City of the Province of Buenos Aires. Coronel Medico Carlos A. Bocalandro, the Minister of Health of the Province of Buenos Aires, gave a most interesting description of the public health and preventive medicine program, using a very ingenious electrically operated map to show the locations of each of the various groups of activities in operation in the Province. The Minister also arranged for visits to the provincial hospitals and institutions in and about the city. The public health program is comprehensive, factual and excellently administered. The anti-tuberculosis campaign has been outstanding. The provincial mortality rate for tuberculosis, all types, of 71 per 100,000 per annum for the calendar year 1943[1] has been reduced to 45 per 100,000 for the calendar year 1949.[2] An active, well-staffed, case-finding program is being operated. Since 1946 more than 100,000 individuals have received B.C.G. vaccine.

The provincial hospitals, preventoria, children's homes and other institutions are excellently housed, administered, well provided with modern equipment, and were scrupulously clean. The architectural design, interior decoration, furnishing and general utilities of the most recently constructed institutions would be classed as model for any community.

The Province of Buenos Aires Institute of Biologics manufactures biologicals including vaccines and anti-rabic treatment and also operates the provincial blood bank. Distribution of whole blood, plasma and special blood fractions is made to all municipalities of the Province. In emergencies the provincial and the municipal police assist in the transportation of blood plasma and blood fractions to the requisitioning hospitals or physicians.

THE industrial medicine and hygiene program in civilian industry in the Republic is a relatively recent development. Factories and shops are being modernized rapidly under the Five-Year Program, but owing to the well-known dollar shortage, complete replacement of obsolete and hazardous equipment has not as yet been accomplished. Such hazards are known to management and every effort is made to protect the workers. When the replacement items become available, the hazards will be eliminated by the installation of new equipment.

The industrial medicine programs at modern industrial plants such as the Compania General Fabril Financiera, S.A., are equal to those operated by large industries in the United States of North Ameria. The coverage afforded is greater. In addition to the complete pre-placement, placement and periodic medical examinations and on-the-job industrial medical treatment, the em-

ployees and the dependent members of their families are given complete medical and surgical coverage without charge by the physicians of the company. The plant housekeeping was superior. Change rooms with individual air conditioned lockers, lavatories, and showers with an ample supply of hot and cold water were provided for both male and female employees. The latrines were of the Continental type, but were well constructed of finely finished concrete and were free from the objectionable odors which are commonly associated with such installations.

Hot meals were available in the company cafeteria. The cost of the meal varied from 20 centavos, (approximately $.02), to one peso, (approximately $.09). The food served varied from a half pint of wine and a large roll for 20 centavos to a plate lunch of meat, beans, leafy vegetable, roll, wine and a sweet for one peso. The cafeteria was clean and the food freshly cooked.

The industrial dispensary at the Compania General Fabril Financiera, S.A., was designed for that purpose and consisted of a reception room, clerical office and record room, general treatment room, emergency operating room, x-ray clinic, physical therapy clinic, a two-bed rest room for men, an infirmary room for women with two beds and two cribs, a dispensary, doctors' offices, a nurse's office, a pharmacy and clinical laboratory, and the usual store rooms. The dispensary was operated 24 hours daily on a three-shift basis. A physician was on duty during each eight-hour shift, as were nurses and technicians.

The records of pre-placement, physical examination placement and periodic examinations were maintained in the office of the personnel director as part of the employee's personnel file. The clinical records are kept in the dispensary.

Many of the industrial plants in and about Buenos Aires maintain industrial dispensaries on a more modest basis. At the larger installations a doctor and nurse are employed full time. The dispensaries are small, consisting of a combined doctor's and nurse's office, a general treatment room, a combined examining room, a combined store room, pharmacy and clinical laboratory, and a rest room.

THE Argentine Army operates an industrial medicine and hygiene program at various military arsenals. An excellent paper, entitled "Seguridad e Higiene Industrial en los Arsenales del Ejercito" (Industrial Safety and Health at the Arsenals of the Argentine Army), was presented to the Military and Naval Section of the Congress by Major Doctor Felix Santiago Bo. This program is well staffed and is operated on the same basis as industrial dispensaries in civilian industry. The rate per 1,000 per annum for accidents, injuries, industrial illness and absenteeism for all causes has been greatly reduced since the introduction of this program. Medical and surgical treatment for the dependents of civilian employees of the Army Arsenals is included in the industrial medicine program.

The medical program for the enlisted and officer personnel of the armed forces is interesting. Medical care and hospitalization are furnished without cost to the personnel on active duty. All military personnel may voluntarily make monthly payments for the medical care of, and when necessary the hospitalization of, their dependents. The monthly payments are graduated, increasing directly with the rank of the individual. The monthly payments, for example, for a Major, Medical Corps, are approximately 20 pesos, $2.00 U. S. currency, per month. Complete medical care including out-patient clinical treatment, all medications, hospitalizaation, all professional services and subsistence while hospitalized are included. Medical care and hospitalization are furnished by the service concerned, i.e., the Army, Navy or Air Forces, whenever military medical personnel and hospitals are available. Contributing members of the armed forces stationed where military-medical-facilities are not available may call upon the nearest licensed civilian physician for medical treatment for himself or dependent members of his family, or if necessary may avail himself of the facilities of the nearest hospital. Under the provisions of this program, fees at fixed rates are paid by the government for all medical care, medications, hospitalization and subsistence while hospitalized.

The Central Military Hospital in Buenos Aires occupies a modern multi-story building near the outskirts of the city. A large addition is being completed which will increase the capacity from 450 to 700 beds. The Campo de Mayo Hospital is located approximately 35 kilometers from the city of Buenos Aires at the celebrated Divisional Campo de Mayo, or Camp of May. The Naval Hospital is housed in a new multi-story building in the city. All of these hospitals are modern in every respect. They are excellently equipped and staffed. A high professional standard is maintained.

AN INDUSTRIAL medicine and safety exhibit was displayed on the second floor of the building housing the Faculty of Medicine of the University of Buenos Aires. Safety suits, safety helmets, protective devices of various types, various types of sampling apparatus, machines for the determination of the concentration of gases, dust counters, Geiger-Mueller counters, safety lamps, and other items of industrial hygiene and safety equipment were on display. The State Department of the United States of North America provided mimeographed Spanish translations of recent articles on important industrial hygiene and safety subjects for gratuitous distribution to visitors to the exhibit. A fully equipped helicopter ambulance was an outstanding exhibit. In addition there were graphic exhibits demonstrating various common hazards in industry, the physiological and pathological effects of work

under such hazardous conditions and the methods for the elimination or control of the basic hazard.

Graphic exhibits setting forth safe and hygienic methods for the performance of industrial processes were displayed throughout the Congress in the large ground floor windows of governmental office buildings located on main thoroughfares in the city of Buenos Aires.

THE delegates to the Congress assembled at the cathedral on the morning of December 13 to pay homage to General Jose de San Martin, the great Argentine soldier and liberator, who by his military genius gained independence for Argentina, Chile and Peru. A wreath was placed upon the tomb, which is in a chapel of the cathedral, by the President of the Congress, Professor Jose Pedro Reggi.

The closing plenary session of the First American Congress on Industrial Medicine was held in the Aula Magna of the Faculty of Law on the evening of December 14. The proceedings of the clausura were deemed of sufficient importance to warrant a special nation-wide broadcast. The opening address was made by Professor Doctor Jose Pedro Reggi, the President of the Congress, who reviewed the results accomplished during the plenary and section meetings and announced that the 1951 meeting, by unanimous vote of the delegates, would be held in Brazil.

The announcement of the winners of prizes for scientific achievement in the advance of industrial medicine and hygiene was then made. The presentation of the diplomas to those who had gained these honors was made by the President of the Republic of Argentina, General Juan Domingo Peron. After congratulating the recipients and presenting the respective diplomas, the President further honored each winner by bestowing upon him the characteristic abrazo, or embrace.

Among the awards presented were the following: a diploma and the sum of 20,000 pesos to the President of the Congress, Professor Doctor Jose Pedro Reggi, for the most outstanding contribution in the field of industrial medicine during the year 1949, his eminently successful work in organizing, instituting and directing the First American Congress on Industrial Medicine; the diploma and gold medal of the Argentine Society of Aviation Medicine and an honorarium of 5,000 Argentine Pesos to Doctor Horacio A. M. San Martin for the best discourse in the field of aviation medicine presented by a member of the National Society of Aviation Medicine; and the diploma and gold medal of the Argentine Army to Colonel Wesley Cintra Cox for the best paper in the field of industrial medicine read before the Military-Naval Section of the Congress.

Upon completion of the distribution of awards, it was announced that Professor Jose Pedro Reggi desired to donate the 20,000-peso award to the government, the money to be used to establish a one-year fellowship for Argentine physicians in industrial medicine and hygiene at a European University.

The principal address of the closing ceremonies, a discourse on the relation of industrial medicine to the governmental program of social welfare and humanitarianism for the workers, was delivered by His Excellency General Juan Domingo Peron, the President of the Republic of Argentine. The following are translations of extracts from his address.

"Before undertaking the development of my theme, I wish to praise the spirit of unity and cooperation which has been exhibited without exception by the delegates of the countries of America present at this Congress. This circumstance permits us to cherish well-founded hope that America may very soon become a community of great and generous ideals whose people realize that the supreme goal of humanity is to live and work in peace.

"I know that all of the delegates belong to the class of men who have overcome difficulties in order to develop organizations which have for their purpose the advancement of aspirations and projects for the promotion of the highest well-being of humanity.

"Each one of the doctors and each member of the associated professions, who has chosen the not always well understood task of industrial medicine, has had to forsake all of the flattery of private medicine to accept, in exchange, the more difficult and hidden burdens of social medicine where victories are rare and difficult to attain.

"No longer is anyone surprised at the passage of laws or decrees for advances in the field of social medicine. Perhaps this is because everyone is now convinced that work is one of the reasons for the dignity of man and that the laborer has the same rights as all others, in fact a man with even greater rights since he is the source of life which nourishes all of the others.

"In our legal constitution there are fixed, as definite guarantees for the workers of Argentina, all the basic rights which are the foundation upon which we have wrought our code of social justice.

"All of these rights have a direct relationship to the fundamental theme of this Congress, for all are conditions that directly or indirectly have an influence upon the complete physical and spiritual health and well-being of the workers.

"If industrial medicine has for its object the study of the personality of the worker and the conditions under which he works in order that the health of the worker may be conserved, it is necessary that we should first give a personality to the worker. Also we must recognize certain rights, without which the worker will never possess the dignity which he should have in order to be the same type of human being as other men.

"This has been our first great task: 'To increase the social culture, to dignify work, to humanize capital.' By these three paths we start

to raise our despised working men and to make them understand that they all have a standard of rights which until now has been denied them. Thus we created the personality of our workers. Our first objective, which constitutes the basis of the study of industrial medicine, has been completed. Now one may study the personality of the worker, for in our country the laborer has a personality.

"It is not unreasonable that our constitution says that work is the indispensable medium for the satisfaction of the spiritual and material needs of the community, the cause of all the gains of civilization and the foundation of the general prosperity; that the wealth, the income and the profit of capital are fruits exclusively of human labor; that it is a consideration of human importance that work be reviewed as a social function, preserving the rights of the individuals to demand dignified and just conditions for the development of their activities; that the care of the physical and moral health of the individual must be a constant and primary preconception of society.

"These last concepts conclude the essential aspects, for in fact all of the rights of the working man unite to create the personality of the man who labors, to give him the fullness of physical and moral health in order that he may attain the greatest happiness possible.

"In this task no one should be niggardly in the collaboration which should be lent to those men who, like ourselves, have as the objective of their lives, service for the community.

"At this moment I summon this cooperation and know that I do not make a vain appeal at the door of your hearts. This summons is not directed solely to the social workers of my country. Through the intermediary of the delegates to this Congress from foreign lands, it is my wish that this summons may also be transmitted to all those men of good will who carry on the battle in the Americas and in the world at large for the welfare of the working man.

"I know that I am expressing to you correctly the deep sentiments of my people, of the working people of my country, who experiencing happiness desire to share this joy with all of the working men who earn the bread of humility.

"To the delegates from foreign lands who fight for and who spur on the battle for the well-being of the working man of their respective countries, I desire to express my unwavering wish for friendship and peace because friendship and peace among the peoples of the world will be gained only when their workers feel themselves to be simple men of dignity, who sing at their work for the joy of having gained justice for themselves, which, as an Italian poet says 'is the hope of the centuries.'"

ONE of the interesting and stimulating events of the Congress was the dinner which followed the closing ceremonies. Here the spirit of Inter-American fellowship and good will was fully manifested by the spontaneity of the informal remarks in Spanish and Portuguese as the groups of delegates called upon representatives of the delegations of the various nations to address them.

The wish was repeatedly expressed that the United States of North America would become a participating member of the Union Americana de Medicina del Trabajo and that the Third American Congress would be held in the United States in 1953.

The delegates to this Congress were animated by the possibilities of the development of coordinated and cooperative concepts and methods for the universal advancement in America of the sciences of industrial medicine, industrial hygiene, industrial nursing and all of the ancillary technical services. These groups, used as a team, provide the complete means for the protection, the maintenance and the advancement of the health of the worker, the provision of safe and hygienic working conditions, the safeguarding of the community environment and advances in the field of human relations.

The First American Congress on Industrial Medicine has opened wide the doors of the spirit of Inter-American scientific cooperation and good-neighborliness. Let us develop and add to these advances by the continuous maintenance of Inter-American harmony and good will between ourselves as workers in a common science, our scientific societies as our official representatives and our Countries as American states.

Links in the bonds of friendship and scientific good-neighborliness may be readily yet firmly welded by the wholehearted participation and support of the American Union of Industrial Medicine by the American Association of Industrial Physicians and Surgeons, the American Association of Industrial Hygienists and the other ancillary industrial medicine associations.

Let us remember that we of the Northern Continent are the younger Americans. The peoples of the nations south of our borders are just as proud of their American heritage as we of the United States of North America are. Their settlements had blossomed into thriving cities when Henrick Hudson first viewed Manhattan Island, and the Pilgrims set foot on Plymouth Rock.

References

1. Lucha Antituberculosa en la Provincia de Buenos Aires, 1949. Report of the Minister of Public Health and Social Assistance of the Province of Buenos Aires, Argentina.

2. Personal Communication Doctor Carlos Alberto Bocalandro, Minister of Public Health and Social Assistance, Province of Buenos Aires, Argentina.

Early Detection of Benzene Toxicity

LAMSON BLANEY, M.D.,
Medical Director,
Monsanto Chemical Company, Plastics Division,
Springfield, Massachusetts

THE statement has been made informally that the maximum allowable concentration for benzene vapors should be zero. The Commonwealth of Massachusetts has recently lowered its MAC to 35 ppm. Certainly, the tendency now is to substitute other solvents whenever possible. There are circumstances, however, when benzene must be used and it behooves those in charge of such operations to approximate as closely as possible the levels suggested above. A well-rounded control program includes both environmental studies and examination of exposed personnel. Its goal is the early detection of benzene toxicity.

THE plant under consideration is one in which polyvinyl plastics have been made since 1937. Seventy-five to 90 persons are employed in certain areas where large amounts of benzene are used. This process is almost entirely closed. In one building, however, several open kettles contain a mixture with a low benzene content. These are fitted with a suitable exhaust system. Irregularities of operations may lead to occasional exposure here. Another source of potential benzene absorption is a group of condensers which must be taken down and cleaned periodically. In addition, there are the occasional unpredictable leaks, especially around pumps, and breakdowns in equipment which must be dealt with. The buildings are new and have both large window space and ventilating ducts to clear the air of vapor contamination.

Environmental studies are made each week by the plant chemist who takes air samples for benzene content in areas where exposure is likely. Spot checks are also made when unusual exposures are possible. An MSA midget impinger is employed with a fritted glass bubbler. Determinations are made according to a modified sulfuric acid-formaldehyde method. This procedure was initiated in 1948.

Employees are briefed in the significance of their exposure: that it is improbable that they will encounter a sudden overwhelming amount of benzene, rather the problem is to prevent repeated low-grade absorption. Air masks or canister masks are required on jobs where contamination is known to exist. None of the normal operating processes is considered to be in this category.

A further environmental check is the urine sulfate ratio determination. It has been shown that with sufficient benzene exposure the amount of inorganic sulfate in the urine falls below a normal of 80% (or greater) of the total sulfates. This is because the products of benzene catabolism are excreted by the kidneys as organic sulfates. Since this effect is evident for a relatively short time after the cessation of exposure, specimens are taken at the end of the last work day of the week. The employee fills out a form wherein are stated the area in which he worked during the preceding eight hours and any unusual contact with benzene. This serves both as a check against unrecognized exposure, which can then be re-evaluated by air sampling, and against any inadequacies in personal protection. The urine sulfate test is performed every three weeks.

All new employees who may be subject to benzene exposure are carefully selected. In taking the past history, special attention is paid to chronic bleeding, anemia, parasitic disease, chronic illnesses, drug ingestion, and allergies. Previous industrial exposures to such substances as solvents and lead are considered. A careful physical examination is performed, followed by a complete blood count, platelet count, urinalysis and chest plate.

Detailed clinical and laboratory records are kept on each employee. Re-examinations are performed every six months to determine if any symptoms or signs of early benzene poisoning are present. At this time workers are questioned as to the general state of their health, intercurrent illness, appetite, sleeping habits, and the presence of bleeding: the skin and mucous membranes are examined for evidence of hemorrhage, and the weight, blood pressure, and pulse recorded. Complete blood counts, and platelet counts are made to detect early signs of stimulation or depression of the hematopoietic system. Macrocytosis, anemia, eosinophilia, granulocytopenia, leukopenia, thrombocytopenia, and the presence of immature cells are regarded as the earliest probable changes in the blood picture.

As yet there has been little evidence of benzene intoxication among employees so examined. Two persons were permanently removed from exposure and one temporarily. The permanent removals were in elderly men, hired during the late war, one of whom ordinarily would not have been considered suitable for such exposure as he had been treated for anemia by his own physician a few months before beginning work at this plant. Initially, his blood count was in the normal range. In the ensuing four years, his hemoglobin, red blood cells, white blood cells and polymorphonuclear cells fell gradually. He developed a 6% eosinophilia. At that time he was absent several weeks with cystitis and upon his return to work was transferred to another department. There has been a recovery in his blood picture since then.

The other employee, permanently removed from exposure to benzene, had a normal blood picture on employment. His hemoglobin, red blood cells, white blood cells, and polymorphonuclear cells fell gradually and he was transferred after two years. He has now recovered.

The person temporarily transferred was a 20 year old male who had served in the Southwest Pacific Theater but gave no history of parasitic disease. His initial blood count was normal. A year later, he ran an eosinophilia as high as 20%. No definite cause was found. Exposure was terminated and three months later the eosinophil count was 3%.

Since 1948 concentrations of benzene in the air have been well below the 35 ppm. recommended by the Commonwealth.

CONCLUSIONS: Methods for control of a benzene hazard are discussed. Clinical studies have shown little evidence of intoxication.

Citations

1. JEPHCOTT, C. M., and BULMER, F. M. R.: The Urinary Sulfate Test in the Supervision of Workers Exposed to Benzene. *J. Indust. Hyg. & Tox.*, 21:132 (April) 1939.

2. HARDY, H. L., and ELKINS, H. B.: Medical Aspects of Maximum Allowable Concentrations: Benzene. *Ibid*, 30:196, May, 1948.

3. HAMILTON, A., and JOHNSTONE, R. T.: Industrial Toxicology. New York, Oxford University Press, 1945.

4. JACOBS, M. B.: The Analytical Chemistry of Industrial Poisons, Hazards, and Solvents. New York, Interscience Publishers, Inc., 1941.

Poster Suggestions

The Use of Radioactive Static Eliminators in a Printing Plant

IRVING L. BERMAN, M.D.,
Medical Director,
EUGENE P. ERNEST,
Safety Officer,
United States Government Printing Office,
Washington, D. C.

STATIC electricity is generated by the movement of paper over rollers in printing presses and in paper folding machinery. The erratic action resulting from the static charges adhering to the surface of paper, particularly at the delivery, results in frequent interruption of the operation of the press. It also results in additional labor for jogging of the delivered material, and a reduction of the speed of the press. The successful elimination or neutralization of static can have an important part in the reduction of costs in a printing plant.

In addition to environmental control, that is, control of temperatures and relative humidity of the work room, gas flame, high-voltage electricity and tinsel have been used with varying degrees of success to eliminate or neutralize static in printing processes. Recently, radioactive materials have entered this field. Alpha radiation emitted by these devices reduces the static charge on the paper by ionizing the air between the paper and the eliminator, thus permitting the static charges to flow through the ionized air to the unit and to ground. At the time of this writing, two radioactive elements are used in this type of unit, radium and polonium.

IN 1948, two radioactive static eliminators were installed on each of four sheet-fed two-color Harris curved "6's." The eliminators consist of an aluminum housing containing a strip of metal ¾ in. wide impregnated with radium. A layer of gold and nickel covers the radioactive source and prevents the escape of radon gas. The static eliminators on these presses are 40 in. long and contain 50 micrograms of radium per linear inch. Since the half life of radium is approximately 1600 years the installation is permanent. Removable aluminum shields are provided by the manufacturer. The units are 2½ in. apart, face each other, and are located on the second cylinder ¾ in. in front of the rubber delivery wheels. The units are in two parallel planes approximately 15° from the horizontal, sloping towards the delivery end.

Eliminators utilizing radium emit alpha particles, and beta and gamma rays as well as radon gas, all of which present a health hazard. Inasmuch as the employees are unaware of the radiation, it is the responsibility of management to take every precaution to protect them from over-exposure. The average employee is apt to become apprehensive once he realizes the potential danger which may result from the use of these eliminators. After taking steps to provide the necessary degree of safety, the problem still exists of overcoming the employee's apprehension. This must be accomplished without destroying his appreciation for the inherent danger in such devices.

In order to safeguard our employees, we first had our installations checked with radiation detecting devices. Readings of combined beta and gamma radiation indicated an exposure of from 3 to 5 mr/hr. at positions which are considered normal for pressmen and helpers. When the plates are being changed the pressman is in close proximity to the static eliminators. During maintenance work the machinists and other workers may be close to the radioactive source. The readings nearest to the eliminators, approximately at the closest point to which an employee might move, were between 500 and 1,000 mr/hr. with the covers removed.

It was not possible to check exposures with the cover plates in place since the installation, made under the direction of a representative of the manufacturer, was such as to make it impossible to install the cover plates. Although the instruction manual contained statements as to the importance of replacing the cover plate when the press was not in operation, no effort was made to use the plates. The fact that alterations were necessary before the plates could be used unquestionably contributed to this practice. The instruction manual, although thorough in its coverage of the hazards of radiation, contains a great deal of material that, because of its technical nature, discourages any but persons with prior knowledge of radiation from examining its full contents. This tends to result in failure to provide adequate protection to employees exposed to the hazard.

The maximum permissible exposure, according to the Atomic Energy Commission, is 300 mr/per week for gamma or 300 mrep per week for beta radiation. The importance of using the shields diligently, on the basis of the readings, is quite obvious. In addition to the need for proper use of shields, other precautions were indicated. As a result of this survey, the following rules were devised:

1. The brackets attaching the static eliminators to the presses should be installed to permit the use of the cover plates. A quick acting attaching device should be used to reduce to a minimum the time necessary to remove the units from the press.

2. The shields shall be affixed to the units when the press is not in use.

3. The shields shall be affixed to the unit when the helper is washing up, or when the pressman is in the space between the press and the delivery assembly making adjustments, or when maintenance division personnel or any other employees enter this space.

4. In cases where the plates are being changed, or where maintenance work is being performed requiring an employee to work between the press and the delivery assembly or within 20 inches of the units for *more than one hour*, the units shall be removed and put in a designated place where other employees cannot be exposed accidently.

5. Gloves should be worn when cleaning the active surface of the eliminator. Clean abrasive-free wiping cloths should be used for this purpose to avoid scratching the metallic coating covering the radioactive source.

It was felt that the tests with radiation testing devices were not conclusive, and arrangements were made to provide the employees working on these presses with film badges. Altogether, three tests were made; two during long runs of the presses of 40 hours or less involving no plate changing and make-ready, and a third test for an eight-hour period involving make-ready and plate change. The first two tests were made with the badge worn on the shirt over the breast; the third test was made with the badge worn on the trousers or apron at knee height, the approximate height of the eliminators from the floor.

These tests indicated that during normal operation, operators were exposed to less than 100 mr per week, while helpers were exposed to as much as 200 mr per week. The reverse proved true during set-up and make-ready; pressmen were exposed to as much as 18 mr/hr, while laborers were exposed to a maximum of less than one-third of that amount.

Radon gas is extremely dangerous. The radon concentration in the workrooms should not exceed 10^{-11} curie/liter according to present knowledge.[1] Evans[2] measured the radon from radioactive static eliminators and found that the concentration under ordinary ventilation was within safe limits, when the static eliminators were intact. However, mishandling of the radioactive bars may result in a radon hazard. The bars should, therefore, be handled carefully as previously indicated.

The polonium static eliminator[3] has not been used at the U.S. Government Printing Office. Since the active life of the polonium eliminator is about one year, units employing polonium have their limitations. Since polonium does not emit beta and gamma rays, it may prove to be a safer instrument than those eliminators which contain radium.

The employees working on these presses were all given a routine clinical examination. Laboratory studies included blood serological test, hemoglobin, white blood cell count differential, red blood cell count, urinalysis and chest x-ray. As an employee was interviewed, he was informed about the potential hazards involved, advised to follow the rules posted on the press, and assured that he was not in any danger of over-exposure. The clinical and laboratory findings did not indicate any ill effects from the static eliminators. However, these negative clinical findings in no way indicate the absence of a radioactive hazard. The employees will be examined at regular intervals.

As a result of this survey, the rules which we devised were posted on the press and the employees were cautioned to follow them in order to avoid over-exposure.

CONCLUSION: We believe that it is safe to use a limited number of radioactive static eliminators in the pressroom provided that:

1. The potential hazard is understood by responsible officials.

2. The eliminators are properly installed.[4] (This is an individual problem for each installation.)

3. At the present stage of development of radioactive static eliminators an adequate survey and follow-up should be made: clinical study, laboratory study and instrumental study.

4. An appropriate set of rules is drawn up and adequate provisions made for their enforcement.

SUMMARY: (1) One type of radioactive static eliminators used in the printing industry and its potential hazards is discussed.

2. The necessary precautions to prevent dangerous exposure to alpha, beta and gamma radiation and radon are outlined.

[NOTE: We wish to acknowledge the assistance given us in this survey by MR. HOLADAY and MR. MODINE, of the Industrial Hygiene Division of the U.S. Public Health Service, Washington, D.C.]

References

1. CECIL: Textbook of Medicine, 7th Edition.

2. EVANS: Evaluation of the beta and gamma radiation due to extended linear sources of radium. *J. Indust. Hyg. & Tox.*, 28:6 (November) 1946.

3. American Newspaper Publishers Association: Research Bulletin 6, February 3, 1949.

4. U.S. Radium Corporation: General information regarding functioning, installation and maintenance of ionotron static eliminators.

A Method of Reducing the Accident Rate in Bus Operation
—Selection of the Bus Operator—

HAROLD BRANDALEONE, M.D., MED. Sc.D., F.A.C.P.,
Medical Director,
and
RICHARD H. DAILY, B.E.,
Safety Director,
Third Avenue Transit System,
New York City

THE National Safety Council reported[1] that in 1948 there were 300,000 bus accidents with 28,700 persons injured and 820 killed per 66,000,000 miles travelled. This large number killed and injured and the huge financial loss can and must be reduced.

Safety in bus operation depends on many factors, i.e., weather, terrain, schedules, maintenance, vehicle design, safety equipment and the driver. Weather and terrain cannot be controlled. The vehicle design, safety equipment and the schedule, however, can be controlled. It is expected that every bus company operate its vehicles with the best safety devices available, and that it maintain this equipment in excellent condition. The most important variable in accident prevention is the driver, and he can become a controlled rather than an uncontrolled factor by proper selection and training.

The object of this paper is to present a method of selection of bus operators to reduce accidents to a minimum. This method has been a major factor in the reduction of accident frequency of 40% in a 24-month period in the Third Avenue Transit System.

Method

PERSONNEL: A complete investigation of the candidate is made by the Personnel Department in the usual manner. Special attention is given to previous employment and army records, as well as motor vehicle and police records. The preferable age is between 25 and 35 years. Occasionally applicants of 22 to 38 years are accepted. The candidate must have at least an elementary school education, and must have a chauffeur's license and one year's driving experience in New York or some other large city. He must be neat and pleasing in appearance, courteous, agreeable and even-tempered. He must have no addiction to narcotics, drugs or alcohol. It is preferred that he be married.

MEDICAL: The candidate is then sent to the Medical Department where he completes a history questionnaire. He is interviewed by the examining physician, to discuss his history in detail. At the same time a simple mental examination is performed in an effort to determine his emotional stability, as well as his mental attitude. A complete physical examination is then made by the physician. Each candidate has a urine and serological examination, and an x-ray of his chest. The results of these are studied by the Medical Director together with the examining physician. If the medical requirements are satisfactory, the candidate is permitted to continue with his motorability examinations.

Motorability and Psycho-Physical Examinations

PERSONAL REACTION TEST: This is a written test adopted from the American Transit Association which measures aptitudes and other personality characteristics relating primarily to the qualities of stability and maturity.

MOTORABILITY TEST: This test is conducted with a special mechanical device designed under the supervision of Mr. G. U. Cleeton for the American Transit Association.[2] It provides a sample performance taken under controlled conditions, which makes it possible to estimate more accurately an applicant's potential ability to do a satisfactory driving job.

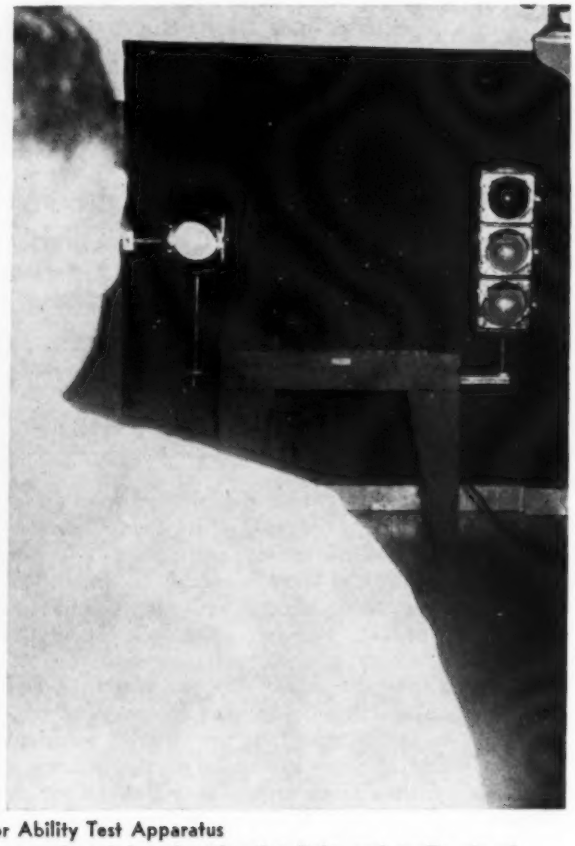
The American Transit Motorability Test equipment consists of a response mechanism, an examiner's control panel, a signal board with pilot light and traffic signal, and a recording apparatus.

The test measures Teachability, Learning Capacity, Attention Qualities, Reaction Qualities, and Volitional Control.

These traits are not measured separately, but are involved in the responses which the applicant must make to obtain a satisfactory performance record on the test.

The test equipment (page 232) utilizes a steering wheel, gear-shift lever and two foot-pedals which are activated by the subject in response to light patterns produced by a signal board carrying a series of small green, amber and red lights and a regulation traffic signal with green, amber and red lights. The test is administered by a specially-trained individual in accordance with detailed instructions, in an effort to maintain a standard method of administration. The tests are in five consecutive sequences, which increase in difficulty and complexity.

The role of the examiner is two-fold. It is his job to put the subject at ease and to obtain complete cooperation, and, in addition, maintain his active interest. As a second role, the examiner serves as an instructor. The test routines are performed in a uniform and constant manner. The complete test requires about 45 minutes. The examiner also records his judgment



The American Transit Motor Ability Test Apparatus

Applicant seated in response mechanism and the examiner control panel

Signal board with pilot light and traffic signal

of the subject, including ability to learn and cooperate, attitude and approach, effort, interest, temperament, and capacity for bus and street car operation. In our company a test score of 65 must be made to pass the motorability test.

According to Waits[2] the scoring of this test is in terms of accuracy and speed of reaction. The subject must make the correct movement for the stimulus presented in terms of two time-intervals, the initial response time and the lapsed time to perform the movement.

The motorability test is a performance test. There is no intent to simulate actual operating conditions, so it is not a work sample. The responses of the subject are unlike those he would use driving an automobile, bus or street car. The test is not, per se, a skill test, even though both skill and a considerable amount of motor coordination are involved. The functions tested are those which should be included in any statement of qualifications of street car or bus operators.

VISION TESTING: The purpose of this test is to determine whether the applicant has certain visual skills considered essential to efficient and safe operation of transit vehicles. These include visual acuity, muscle balance, depth perception, color perception and night-driving vision.

PSYCHO-PHYSICAL TESTS: After successfully passing his motorability and written test the candidate is sent to the Safety Clinic to undergo the following psycho-physical tests:

(A) *Peripheral or Tunnel Vision Test:* This examination is made with an instrument devised to test the lateral or vertical fields of vision while the eyes are focused on a point straight ahead.

(B) *Glare Resistance to Night Driving.*

(C) *Depth Perception:* Stereopsis, i.e., depth perception or three-dimensional vision, is a visual characteristic derived from binocular vision. This test detects the ability of the candidate to judge the distance of approaching vehicles correctly during the night or day driving. If a weakness is shown here the applicant may either be rejected or given instructions to overcome the weakness.

(D) *Hearing Test:* This test is performed with an audiometer. The minimum requirement is 30 decibels at 500 cycles per second.

When all these tests are completed the reports are studied by the Medical and Safety Directors in order to reach a final decision.

When a candidate has passed his examinations, he receives road instructions and training. If an applicant is eligible except for a corrective physical deformity, he is told of this, and, if he wishes, arrangements are made to correct it. When cured, he is accepted by the company. It has been found that 35% of the men examined are not qualified.

Results

THE records of 40 operators selected by the old criteria in 1947 and 1948, as well as the records of 40 operators selected by the new criteria in 1949 were studied. The candidates selected by the old criteria will be called Group "A," and those selected by the new criteria will be called Group "B."

The operators in each group were chosen from the same divisions so that the routes, terrain and traffic were comparable. The studies in each group were made during identical seasons of the year, and the weather was similar.

The operating records of both groups were examined for the periods of September through November, 1948, for Group "A," and September through November, 1949, for Group "B." The standard or normal hours of work for these periods were the same for both groups.

In the three-month comparison the men in Group "A" averaged 569 working hours and the men in Group "B" averaged 589 working hours. This indicates a greater operating ability in Group "B" of 3.52% over Group "A." Therefore any conclusions relative to the efficiency of the new group as compared to the old, must be increased by 3.52% of such efficiency rate.

The accident records of the 40 operators in each group were studied for the period covering their first six months of operation, and the results are shown in Table 1.

TABLE 1.
CLASSIFICATION OF ACCIDENTS BY TYPE IN NUMBERS

	Group "A" Old Criteria	Group "B" New Criteria	Difference Old—New
Total Number	229	128	101
Non-Preventable	145	100	45
Preventable	84	28	56

The above statistics indicate 101 fewer accidents by Group "B" as compared to Group "A," or a decrease of 44%. Of these, 56 were of the preventable type and 45 of the non-preventable type, indicating that the majority (55%) were of the category over which the operator had a medium of control.

Table 2 demonstrates the percentage of preventable and non-preventable accidents in both groups.

TABLE 2.
CLASSIFICATION OF ACCIDENTS BY TYPE AS TO PERCENTAGE DISTRIBUTION

	Group "A" Old Criteria	Group "B" New Criteria
Total Number of Accidents	100.0%	100.0%
Non-Preventable	63.5	78.0
Preventable	36.5	22.0

Comment

THIS method of selection of candidates for bus operation is possible because of close cooperation among the Personnel, Safety and Medical Departments. The cost of maintaining this method is small in comparison to the savings effected. Furthermore, the time and effort involved to exclude the unqualified candidates have been worthwhile when it is realized that the cost of training a bus or trolley operator has been placed at from $300 to $500. When such an investment must be made in each man employed, it is vital that every possible means be utilized to train only those who will succeed and who will stay with the company. While these tests do not guarantee results, they furnish significant information for use in isolating the group most likely to maintain the best safety record.

Careful analysis of the results of all tests must be made by both the Safety and Medical Departments to determine the final disposition of the candidate. The use of several tests in addition to the complete physical and mental examinations affords us as much information as possible from which to select the ideal applicant.

It is not within the scope of this report to outline the long list of obvious medical defects for which a candidate should be rejected. The criteria might vary in each company, but, for example, such disabilities as impaired vision or hearing, epilepsy or severe vascular degenerative diseases should disqualify a man immediately. Any conditions that might cause sudden disability to the bus operator and therefore endanger his passengers, should rule out the candidate. It has been found[3] that there is a direct relationship between certain physical defects and accidents.

There is a group of seemingly innocuous medical conditions for which we reject a candidate. Experience has shown that these minor difficulties have far-reaching effects. Such conditions as ulcerated hemorrhoids, pilonidal cysts, ulcerative colitis, and osteomyelitis cause an operator to lose a great deal of time from work. This absent driver imposes on the other men in his division who must maintain the schedules; the overtime work fatigues them and they become predisposed to accidents. The serious organic mental conditions such as schizophrenia and manic depressive psychosis are picked up during the motorability or personnel examinations. The less obvious mental conditions are discovered during the medical examinations.

It has been our practice to reject a candidate who presents a psychoneurotic picture, because we have found that under stress these men become accident repeaters. This type of driver becomes easily upset, argues with passengers, and may even strike an irritating passenger. Furthermore, he develops all sorts of psychosomatic complaints, which cause him to lose a great deal of time. This again puts extra stress on the other members of his division.

The effort used in selecting bus operators by our method proves its value when our results are studied carefully. It has been shown that Group "B" men selected by the new criteria

worked 3.52% more in a period of three months than Group "A" (men selected by the old criteria). In any organization operation the greater the income-producing potential, the greater the economic value of the group. This added percentage of working hours must be considered when evaluating the accident records of both groups. It would indicate that Group "B" (new criteria) had an accident potential that was greater than Group "A." Nevertheless, Group "B" had a 44% decrease in accidents.

Study of Table 1 indicates that the number of preventable accidents was decreased in Group "B." This indicates that the proper selection and training can and do decrease the number of accidents that can be controlled by the operator.

This method of selection must be followed by careful supervision of the driver at frequent intervals in order to keep the accident rate at a minimum. Every bus operator should have a complete routine medical examination annually. An operator might develop bad driving habits and require retraining, or he might become mentally or physically ill. If he is physically able to work, but unsuitable to drive, a proper job is obtained for him until he is able to return to bus operation.

Details of the method and results of retraining bus operators will be presented in a future report.

Summary

A METHOD of selecting candidates for bus operation in a large city transportation system has been presented.

2. This method involves close cooperation of the Personnel, Medical and Safety Departments.

3. Complete motorability, psycho-physical and medical examinations are performed.

4. This method has been a major factor in reducing the accident frequency 40% in a 24-month period.

5. In spite of the fact that standard work hours were the same in the two groups of operators compared for a three-month period, it was found that men selected by the new criteria worked 3.52% more than men selected by the old.

6. During comparable six-month periods it was found that the men selected by the new criteria had 101 fewer accidents than men selected by the old criteria.

7. Fifty-five per cent of the reduced number of accidents in the new group were in the category over which the operator had a medium of control. This proves that proper selection and training can reduce the number of preventable accidents.

8. Annual medical examinations and regular retraining periods are necessary to maintain a minimum accident rate.

[NOTE: The authors wish to express their appreciation and gratitude for the assistance and cooperation given by JOHN D. SUREAU, Director of Personnel, DR. GERALD J. FRIEDMAN, Assistant Medical Director, and EDWARD FLAMM, Assistant Engineer.]

Citations

1. National Safety Council Report: "Accident Facts." 1949.

2. WAITS, J. V.: The Use of the American Transit Motorability Test in the Selection of Bus and Street Car Operators. Proceedings of the Twenty-Sixth Annual Meeting of the Highway Research Board, December, 1946.

3. KRAFT, MERWYN A., and FORBES, THEODORE W.: Evaluating the Influence of Personal Characteristics in the Traffic Accident Experience of Transit Operators. Proceedings of the Twenty-Fourth Annual Meeting of the Highway Research Board, December, 1944.

What Is a Hangover?

THE National Research Council intends to find out why 3,750,000 Americans drink too much. It also will seek an answer to: "What is a hangover?" The answers will be sought by a committee on problems of alcohol which has been set up in the council's division of medical sciences. The council is the "operating agency" of the country's top scientific body—the National Academy of Sciences. The attack on the alcohol problem marks the beginning of the council's long-considered effort to coordinate the work of many scattered agencies, foundations, clinics and committees that have started explorations into various aspects of the subject. The committee hopes to stimulate research in what is said is a "sadly neglected" field. Among questions needing answers it listed: (1) Just what does alcohol do once it gets in the body? What are its nervous, physiological and psychological effects? (2) What hereditary or chemical influences make some persons drink more than is good for them? (3) What are the processes occurring in the body which result in a hangover? The committee is headed by Dr. Chauncey D. Leake, of the University of Texas.

—*Chicago Daily News*, April 29, 1950.

The Use of Intravenous Procaine in Trauma

DAVID J. GRAUBARD, M.D., and HARRY V. SPAULDING, M.D., F.A.C.S.,
Company Surgeons, Baltimore & Ohio Railroad,
New York

IN A PRELIMINARY study of the treatment of trauma by procaine administered intravenously, it was suggested that the relief of pain and spasm obtained by this method warranted further investigation.[1] Now after four years' use of this method it is possible to summarize our findings and evaluate the use of intravenous procaine both as a therapeutic adjuvant and as a diagnostic aid in the management of trauma.

The symptom-complex of pain whether due to physical, chemical or bacterial agents is produced by two separate but correlated mechanisms: transmission of nerve impulses and dysfunction of the vascular supply. The recognition of pain requires, anatomically, three neurons: primary or peripheral, secondary or spinal, tertiary or cerebral. The peripheral cerebrospinal sensory fiber has two branches, one of which ends in a sense organ while the other terminates in contact with the wall of a nearby blood vessel. This bifurcated entity is the axon reflex arc—the local nervous control.[2] The peripheral blood vessels are innervated extrinsically from rami from adjacent nerves at intervals along their course.[3] The segmental distribution of sympathetic fibers is especially true in the forearm from the elbow down and in the leg from the knee down. In addition to the local axon reflex we must recognize the presence of two reflex arcs. One is the cerebrospinal with terminations in effector organs and the other the autonomic with synaptic connections in ganglion cells. If we could visualize the course of an impulse arising in tissues, we would follow not only the stimulation of the cerebrospinal pathway but also the activation of the autonomic nervous system through the local axon reflex. At the branched axon two mechanisms may work: (1) a misinterpretation by the central receiving apparatus of the source of the pain impulse, (2) the production peripherally of metabolites, a result of antidromic impulses. These metabolites may at first stimulate and later injure nerve endings. To the first mechanism we can ascribe referred pain and to the other referred tenderness. When a local anesthetic is applied to an area of reference not only are the painful sensory impulses blocked but also the antidromic impulses which activate and perpetuate pain.[4]

Soon after the nerve pattern has been initiated, dysfunction of the capillary bed occurs. Hydrogen ion concentration changes in the tissues and hypoxia lead to increased capillary permeability. The pain complex is then aggravated because of the increasing amounts of metabolites dissipated into the tissues.[5] This dysfunction prevents normal metabolism, interferes with fluid exchange, allows for the accumulation of metabolites and eventually leads to degeneration and local death of tissue.[6] Fortunately, most of the time repair is uneventful and pain is eliminated. But should an irritative focus persist, irreversible pathologic changes in the ganglion cells of the autonomic nervous system may take place at spinal levels.[1,7]

When procaine is administered intravenously it is concentrated seven to eight times more at the site of injured tissue than in other parts of the body. This phenomenon can be readily understood because dysfunctioning capillaries are as readily permeable to ions as to colloids.[8,9] As stated, procaine upon entering injured tissues relieves pain and spasm by its anesthetic action.

Dosage

THE procaine hydrochloride used for intravenous administration is a 0.1% solution in isotonic saline. Until recently this solution was prepared by the addition of 1 gm. of procaine hydrochloride, 5 cc. of a 20% solution, to 1000 cc. of isotonic saline. This solution was then agitated thoroughly to insure complete dissolution. However, 0.1% procaine hydrochloride solutions are now available commercially.* To this solution we add 1 gm. of vitamin C. This addition, according to Richards, increases the resistance to any toxic side effects of procaine. especially in patients who suffer from nutritional deficiencies.[10] In addition, those patients who have been on salicylate therapy have a vitamin C deficiency.[11]

We have found that the best dosage for the infusion is the "procaine unit": 4 mg. of procaine hydrochloride per kg. of body weight.[12] This precalculated dose is administered in 20 minutes. Thus an individual weighing 70 kg. (154 lbs.) would receive 280 mg. of procaine hydrochloride or 280 cc. of the 0.1% solution in 20 minutes or 14 cc. per minute for 20 minutes. Since the number of drops per minute descending through the ordinary infusion set is difficult to count at a high rate of speed, and because many drip instruments are inaccurate we use a variable-area metering instrument,[13] which allows us to measure with accuracy the number of cc. of flow per minute. In almost 6000 infusions given to more than 900 patients we have encountered no morbidity or mortality. No sensitivity to procaine has been observed. No addiction has been noted. None of our patients is pre-medicated with barbiturates.

Presented at the Sixty-Second Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, April 4, 1950.

*Procaine Hydrochloride 0.1% in Isotonic Sodium Chloride Solution, Abbott Laboratories, North Chicago, Ill.
Novocaine Hydrochloride 1:1000 in Isotonic Saline Solution, Winthrop-Stearns, Inc., New York, N. Y.

Clinical Observations

THIS report is based on 463 cases of trauma who, in addition to definite surgery, received 1783 infusions of procaine intravenously. The following criteria were used as the basis for the evaluation of our results: (1) the patient's statement as to the relief of pain; (2) various signs indicative of improvement such as increased mobility, diminution of cyanosis, reduction of edema, etc. Since description in detail of all types of trauma would be impractical, we have chosen a general classification. Table I represents the number of cases treated, with the number of injections given in each subdivision.

TABLE I.

CLASSIFICATION	Cases	Infusions
Fractures	112	243
Post-reduction Arthralgia	36	144
Sprains	35	62
Intervertebral Disc	27	54
Myofascitis	103	512
Traumatic Arthritis	49	183
Causalgias	64	484
Miscellaneous	37	105
TOTAL	463	1783

FRACTURES: All our cases were seen within 24 to 48 hours following trauma. This time variation represents the period between time of trauma and admission to the hospital. We have excluded all cases of compound fracture. The 112 cases represent fractures of various types involving most parts of the body. Thirty patients were given procaine infusions intravenously prior to reduction. Although in all these cases there was considerable relief of pain, in only two instances was there sufficient relaxation for reduction. A general anesthetic was required in the other 28. In 82 cases the intravenous administration of procaine was given post-reduction. In all we obtained immediate relief of pain. In some cases infusions were repeated in order to relieve some mild pain or help decrease edema. In most patients the burning throbbing pain at the site of fracture is relieved immediately after the infusion. Usually within 48 hours post-traumatic edema diminishes so markedly that the plaster of Paris casings have to be reapplied.

The following is typical of our series: Case I, M.Mc., a 45 year old housewife, fell on her outstretched left hand 16 hours prior to admission. Examination revealed a markedly swollen and deformed left wrist. Radiologic examination showed a transverse fracture of the distal portion of the radius with displacement of the distal fragment dorsally and a transverse fracture of the syloid process. Under general anesthesia reduction was accomplished and plaster of Paris splints applied. The next day the patient complained of severe throbbing pain in the wrist and hand. The fingers were edematous and had a slight cyanotic hue. Her weight was 60 kg. and she was given an infusion of 240 cc. of 0.1% procaine in saline. Relief of pain was immediate following the infusion, and she moved her fingers voluntarily and painlessly. She was discharged to the outpatient department, to which she returned two days later. The edema had decreased so remarkably that new plaster of Paris splints were applied. Another infusion was given at this time. One week later, another infusion was given because of some slight discomfort in the wrist. The splints were removed 17 days post-trauma. Radiographic examination at that time showed callus formation and evidence of healing. On the 25th day post-trauma she was able to do her usual housework without difficulty and was discharged as improved six weeks post-trauma.

Although there is some clinical evidence of early healing in some cases, the small number of our series does not warrant definite conclusions. One of us (DJG) has been able to demonstrate increased osteoblastic formation in those animals treated with procaine intravenously.[14]

POST-REDUCTION ARTHRALGIA: There were 33 cases of dislocation of the shoulder, two of the elbow, and one of the ankle. All were reduced under general anesthesia. Post-reduction all suffered from pain and muscular spasm. The elbow cases, in addition, had severe swelling due to hemorrhage. Relief of pain and spasm was noted immediately following the infusion. Repetition of infusions is deemed necessary upon the return of pain or spasm.

Case II, M.O., is a 29 year old firefighter who sustained a subglenoid dislocation of his left shoulder in line of duty. Following reduction under a general anesthetic he complained of severe pain in the shoulder girdle. The first day post-trauma he was given an infusion of procaine hydrochloride with immediate relief of pain. He was able to sleep well and did not require the use of sedatives. Three days post-reduction he was discharged to the care of the Fire Department Surgeon. Six weeks post-trauma, just before his return to full active duty, examination revealed no limitation of motion and no disability. This patient volunteered the information that following the procaine infusion he had no pain except an occasional twinge whenever the weather changed.

SPRAINS: Thirty patients with acute sprains of the ankle and five chronic cases comprise our series. All cases were examined radiographically, revealing no evidence of fracture. Most of the acute cases require only one infusion. The chronic cases, those of many months duration (in one case seven years) require a series of eight to 10 infusions usually at weekly intervals. The advantage of the intravenous route over the local infiltration of procaine is the absence of the disagreeable "after pains."

INTERVERTEBRAL DISC RUPTURE: The diagnosis in all of our cases in this series were made not only clinically but also operatively. In this type of case procaine administered intravenously will not relieve pain or spasm, for here the pain syndrome is due to direct pressure. Each patient

was given two infusions, one each day for two days. Procaine infusions may thus be used for differential diagnosis.

MYOFASCITIS: In this group we have classified all cases of back pain without underlying pathology. Twenty-six of these patients had pain and spasm in the scapular region and the balance in the low dorsal and lumbar areas. The results in the management of pain of those whose complaints were in the upper portion of the back were not satisfactory. Our failure to relieve this type of shoulder pain indicates that our diagnosis was inadequate. At this date critical analysis seems to indicate that many had scalenus anticus syndromes.

In those patients complaining of low back pain our results have been dramatic. Relief of pain may last only 24 to 48 hours after the first infusion but the patient becomes ambulatory. When the pain does return its severity is markedly diminished and relief is obtained with subsequent infusions. Repetition is based on symptomatic complaints. We wish to present the following two cases:

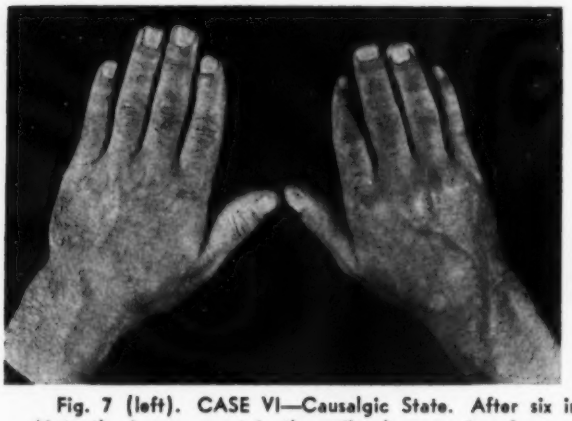
Case III, S.G., is a 53 year old saleslady who, one week prior to admission, lifted a heavy box, following which she complained of severe pain at the lumbosacral junction. Physical examination revealed marked spasm of the lumbar muscles, diffuse tenderness, and marked restriction. Neurologically and radiographically she was within the normal limits. Immediately after the first infusion, there was relief of pain and decrease in spasm. This patient received another infusion the following day because of the return of some pain, not enough to keep her confined to bed. Three days later she received her final infusion and returned to work. Re-examination of recent date reveals no return of symptoms three years after the original accident.

Case IV, W.R., is a 39 year old stevedore who twisted his back while handling bags of sugar one and a half years prior to treatment by us. He was treated by physical therapy methods—diathermy, heat, massage. He wore a low canvas-type of back support. Examination three months ago revealed muscle spasm in the lumbar area accompanied by restriction in mobility. Most of his tenderness was along the paravertebral borders. Two days after the first infusion he was able to return to light work. He received a total of eight infusions in the past two months,

Figs. 1 and 2. CASE V—Causalgic State. Note the limitation of flexion in thumb, index, and little fingers of left hand, November 16, 1948

Figs. 3 and 4. CASE V—Causalgic State. Marked improvement in flexion of thumb, index, and little fingers left hand, immediately after infusion of procaine hydrochloride intravenously, November 16, 1948

Fig. 5 (left). CASE VI—Causalgic State. Prior to treatment on August 15, 1948. Note the increased edema of fingers, malformation of the nails and loss of skin wrinkles. Fig. 6 (right). CASE VI—Causalgic State. Prior to treatment limitation of flexion of fingers on August 15, 1949



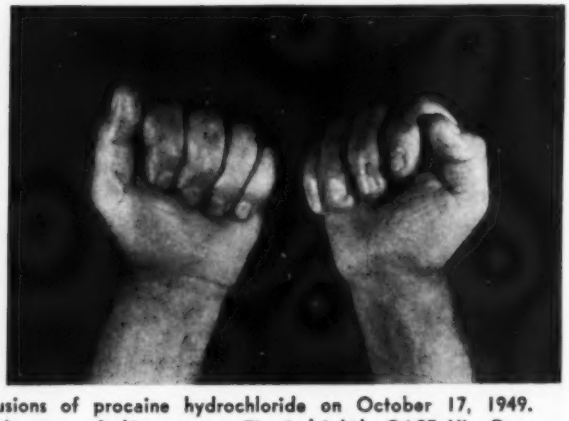


Fig. 7 (left). CASE VI—Causalgic State. After six infusions of procaine hydrochloride on October 17, 1949. Note the improvement in the nails, decrease in edema, and return of skin creases. Fig 8 (right). CASE VI—Causalgic State. After six infusions of procaine hydrochloride on October 17, 1949. Note the increased mobility of fingers in flexion

and for the past month has returned to his regular work. He no longer needs a back support.

TRAUMATIC ARTHRITIS: A recent report[15] indicated that approximately 85% of this type of cases improved under intravenous procaine therapy. The improvement noted depends upon relief of pain and increased mobility. As to the latter, anatomic factors play a deciding role. One cannot expect increasing mobility where ankylosis is present and evident. In this group are included six cases of monoarticular arthritis of the hip following reduction and pinning. Relief of pain was obtained in all of these cases. Usually relief of pain after the first infusion lasts four to six days. We have found that infusions given weekly for a total of six to eight weeks usually give sufficient relief of pain and spasm to allow the patient to get about more easily.

CAUSALGIA: This entity, also known as reflex sympathetic dystrophy has always been a challenge to the surgeon. No more dramatic effect can be obtained than by procaine administered intravenously. The following cases illustrate our results:

Case V, P.D., is a 47 year old cabinet maker who was injured on May 19, 1948, when a molding machine "kicked back," injuring his left hand. He sustained compound comminuted fractures of all the phalanges of the left hand and multiple lacerations. He was treated adequately by a competent surgeon. When first seen on November 16, 1948—six months after injury—his chief complaints were loss of function, pain on flexion of fingers and wrists, associated with coldness of the hand and excessive hyperhidrosis. Figs. 1 and 2 reveal the status of both hands before inception of therapy. Limitation of flexion of fingers is due to (1) causalgic state, and (2) ankylosis of interphalangeal joints. He received three infusions the first week and was able to return to light work in a supervisory capacity. Five more infusions were given in the next six weeks, at the end of which time he was free of pain, coldness, and hyperhidrosis. Figs. 3 and 4 show the improvement immediately after the first infusion.

Case VI, A.D., is a 39 year old laborer whose right hand was caught in the wheel of a compress machine on May 2, 1949. His entire right upper extremity was twisted into extreme rotation and pronation. He was treated by several physicians prior to treatment with procaine on August 15, 1949—three and a half months after injury. His chief complaints were pain and swelling of the

right hand, inability to use his elbow or shoulder. Examination revealed the usual causalgic state of cyanosis, sweating, and tenderness. Radiographically there was no evidence of fracture, but osteoporosis was marked. He was given a total of six infusions, the last on October 17, 1949, when he returned to his regular work. Figs. 5 and 6 show the condition prior to treatment and Figs. 7 and 8 at the time of discharge.

The marked improvement in the two cases described is typical of our series. In two cases where results were not satisfactory, failure is ascribed to the extension of the irritative focus to spinal and cerebral levels. Both of the cases may eventually come to surgery.

MISCELLANEOUS: In this category we have grouped lacerations, head injuries, traumatic phlebitis, burns, and trench foot.

Lacerations: In the three cases in which infusions of procaine were given prior to and during repair of superficial lacerations, adequate anesthesia was obtained. These cases are mentioned as a suggestion in the management of severe lacerations in which general anesthesia is contra-indicated or regional anesthesia may not be feasible.

Head Injuries: There were six cases of post-concussion syndrome and one case of subdural hematoma. In the former our results were diminution of headache, decrease in dizziness, and a general improvement in psyche. After one and one-half years of observation of these cases the improvement noted at the end of treatment has been maintained and constant. The one case of subdural hematoma suffered from dysarthria, spasticity, and loss of motion in the right upper and lower extremities. He showed marked improvement after four infusions: clearer enunciation, increased mobility, decrease in spasticity.

Traumatic Phlebitis: This series includes three cases of upper extremity phlebitis and 10 of the lower extremity. In the former category trauma was directly over the antecubital veins. In the latter it was associated with varicose veins. Daily infusions are usually required in this type of case for about one week, at the end of which time sufficient improvement can be noted to allow ambulation and even return to light work.

Burns: Four patients with severe burns of the extremities and trunk were treated by daily infusions of procaine. Our results did not differ from those of Gordon.[16] The analgesic obtained allowed for painless dressings when the infusion was given prior to dressing. Morphine and other soporifics were replaced by this form of therapy.

Trench foot: The results in this category have been very satisfactory. Two cases of chronic trench foot were treated by procaine infusions. The results were relief of pain, coldness, and cyanosis and increased mobility of the foot and toes. One case of acute trench foot responded remarkably well. Edema, along with the other symptoms, decreased sufficiently in 24 hours to permit the patient to wear his shoes.

Discussion

IN THE treatment of traumatic conditions one of the prime objectives of the surgeon is the relief of pain. This symptom cannot be palpated, examined under the microscope, or measured; we must therefore accept as true the patient's evaluation of the degree of pain that he suffers. In some instances the pain that a patient describes may be the result of a fixation-neurosis or of a physical condition completely unrelated to the traumatic condition under treatment. Recognition and proper diagnosis of these sources of pain can often be made if the patient is given the opportunity to talk freely to the doctor about his complaints. On the other hand in those cases in which the symptom-complex can be directly attributed to a traumatic condition, we have found that the use of procaine administered intravenously has, in a great majority of instances, diminished and alleviated the symptom complex of pain to such an extent that the patient's recovery and early rehabilitation have been hastened.

From a social-economic standpoint the quicker the recovery of the worker, the earlier his return to his work and his independence. We have found that the period of disability suffered by patients treated with intravenous procaine infusions has been enough shorter to warrant a more frequent use of this procedure.

Conclusion

FOUR years' experience with procaine administered intravenously in the management of trauma has been evaluated. Its use as an adjuvant in the management of pain and as a differential diagnostic measure should be extended.

References

1. GRAUBARD, D. J., and RITTER, H. H.: Intravenous Procaine in the Treatment of Trauma. *Am. J. Surg.*, 74:764, 1947.
2. KUNTZ, A.: The Autonomic Nervous System. Lea and Febiger, Philadelphia, 1945.
3. STOEHR, P.: Mikroskopische Beitrag zur Innervation der Blut Kapillaren beim Menschen. *Zbschr. f. Zellforsch u. Mikr. Anat.*, 3L431, 1926.
4. SINCLAIR, D. C., WEDDELL, G., FEINDEL, W. H.: Referred Pain and Associated Phenomena. *Brain*, 71:184, 1948.
5. MOORE, F. M.: Some Experimental Observations Relating to Visceral Pain. *Surgery*, 3:534, 1938.
6. GRAUBARD, D. J., ROBERTAZZI, R. W., and PETERSON, M. C.: Intravenous Procaine—A Preliminary Report. *New York State J. Med.*, 47:2187, 1947.
7. GRAUBARD, D. J., WALDMAN, M. H., and PETERSON, M. C.: Intravenous Procaine in the Management of the Injured Hand. *New York State J. Med.*, 48:1693, 1948.
8. COPE, O., and MOORE, F. D.: A Study of Capillary Permeability in Experimental Burns and Burn Shock Using Radioactive Dyes in Blood and Lymph. *J. Clin. Investigation*, 23: 241, 1944.
9. NITZKY, M. G., and LEITER, S. S.: Capillary Permeability to Horse Proteins in Burn Shock. *Am. J. Physiol.*, 140:1, 1943.
10. RICHARDS, R. K.: Effects of Vitamin C Deficiency and Starvation upon the Toxicity of Procaine. *Anesth. & Analg.*, 26:22, 1947.
11. KOVACS, J.: Personal communication.
12. GRAUBARD, D. J., and PETERSON, M. C.: Clinical Uses of Intravenous Procaine, Charles C. Thomas, 1949.
13. GRAUBARD, D. J., ROBERTAZZI, R. W., and PETERSON, M. C.: A Method for Accurately Measuring the Rate of Intravenous Fluids. *Anesthesiology*, 8:372, 1947.
14. GRAUBARD, D. J.: Unpublished data.
15. GRAUBARD, D. J., and PETERSON, M. C.: Intravenous Use of Procaine in the Management of Arthritis. *J.A.M.A.*, 141: 756, 1949.
16. GORDON, R. A.: Intravenous Novocaine for Analgesia in Burns—A Preliminary Report. *Canad. M.A. J.*, 49:478, 1943.

Clinical Observations on Carbon Disulfide Intoxication in Italy

PROFESSOR ENRICO CARLO VIGLIANI,
Milan, Italy

FROM 1940 to 1942 an epidemic of CS_2 intoxication occurred among workers of two large Piemontese yarn and staple fiber factories where about 6,000 workers are employed. There were more than 150 cases of intoxication, 100 of which were observed personally, and these cases serve as the basis for this study.

This episode was influenced by:

1. The diminution in natural ventilation at night because of the "black out" incident to war;
2. The great increase in production, especially of the staple fiber;
3. The inability to apply effective preventive measures because of the then used procedure for staple washing and bleaching;
4. The increase in working hours up to 10 to 11 hours a day;
5. The employment of inexperienced workers and personnel living at a great distance from the factory; and
6. The dietary restrictions of the war.

The cases of intoxication appeared in certain departments as shown in Table 1.

In the plants considered, certain steps of the operation were among the most dangerous, such as the work of unloading the staple washing machines, transporting the fiber, and the feeding of the bleaching machine, where the workers were in constant contact with large amounts of desulfurized staple fiber which produced a high concentration of CS_2 in the air, not withstanding the presence of hoods supplying fresh air.

Table 2 demonstrates the length of time between the job exposure and the development of symptoms.

Analysis of the Clinical Picture

THE clinical manifestations, in order of frequency, were: polyneuritis, 88%; gastric disturbance, 28%; headache, 18%; vertigo, 18%; "sexual weakness," 16%; myopathy, 15%; tremor, 15%; psychoses, 6%; extrapyramidal disturbances, 3%; optical neuritis, 2%, and hemiparesis, 1%. Of the symptoms presented the earliest were polyneuritis and gastric disturbance; the latter and the myopathy most prolonged, often leading to permanent disability and to retrobulbar neuritis and extrapyramidal changes.

TABLE 1.
DISTRIBUTION AMONG THE VARIOUS DEPARTMENTS OF THE 100 CASES OF CS_2 POISONING

Department	No. of cases
Churn	11
Staple washing and bleaching	71
Staple spinning	9
Vacuum washing of yarn bobbins	5
Others	4
	—
	100

Polyneuritis

THIS symptom involves, almost exclusively, the lower extremities and is characterized by a weakness and a "heavy" sensation of the legs. There is some pain at the knee, motor weakness, loss of strength, and paresthesia. Total paralyses are rarely seen and muscular atrophy is encountered only in the more serious cases. The Achilles reflex is absent and, in the serious cases, the knee jerks are not demonstrated. In the initial stage there is some accentuation of the tendon reflexes with clonus of the foot or the knee easily produced. A decisive sign, it is believed, of CS_2 poisoning is the disappearance or marked diminution of the Achilles reflex. In severe cases there is some difficulty encountered on standing on tip-toe or in dorsally flexing the foot. Very infrequently a typical "steppage" is encountered. Paresthesias accompany the polyneuritis and a hypesthesia of the sock or glove variety.

As to the course of these cases, the less severe cases recover in two or three months and others may last from six months to a year. Treatment consists of repeated injections of thiamin chloride, injections of strychnine derivatives, massage and electrical therapy. The efficacy of vitamin therapy is to be questioned.

Psychoses

THE literature reveals that the frequency of psychoses in cases of CS_2 poisoning range from 50 to 90% of all cases reported. According to one author, the acute psychoses appear during the first three months of work. Among the cases studied, only six presented findings which could be classified as psychoses. In addition, in one case an acute psychosis developed after three months' exposure at staple bleaching. There were vertigo, diminished sensation, disorientation, and decrease in memory. The patient recovered, however, in about 20 days. Others in the group have demonstrated depression and melancholia.

Optic Neuritis

THE two workers in whom the finding of optic neuritis was seen showed restriction of the field of vision, and pallor of the optic disc in the

TABLE 2.
LENGTH OF TIME BETWEEN ONSET AND CESSATION OF WORK DUE TO CS_2 POISONING

Department	less than 6 mos.	from 6 mos. to 1 yr.	1-2 years	2-5 years	more than 5 yrs.	No. of men
Churn	1	2	3	3	2	11
Staple washing and bleaching	15	22	13	16	5	71
Staple spinning	1	—	—	7	1	9
Vacuum washing of yarn bobbins	—	—	1	2	2	5
Others	—	—	—	2	2	4
Aggregate	17	24	17	30	12	100

temporal half. In one case, a central scotoma was observed.

Myopathy

IN 1944 Maspes, Visintini and the author described a new manifestation of carbon disulfide intoxication, i.e., myopathy. In the typical case the patient feels, in addition to the polyneuritic disturbances, a sensation of great weight in and rigidity of the legs, accompanied by induration and cramps of the calf such as to alter the gait and to force the affected individuals to rest after a few hundred steps. Arising from bed in the morning is especially difficult and the patient must massage the legs prior to arising. On examination there seems to be "a bundling" of the muscles of the calf. On biopsy, there is seen many a true hypertrophy of muscle fibers, atrophy of others, with some connective tissue scarring. There was no cellular infiltration or fat deposits demonstrated. It is felt that the first phenomenon is the muscular hypertrophy associated with a change in excitability, and that the atrophy, degeneration and sclerosis of connective tissues are secondary phenomenon.

Extrapyramidal Symptomatology

IN 1928 the extrapyramidal syndrome of CS_2 intoxication was first discussed by Quarelli wherein he described a pallidal syndrome with increase in muscular tonus, amimia, oily skin, tremors, and symptoms of lesions in the caudate nucleus characterized by choreic and athetotic movements and torsion spasms. Ten cases of this syndrome, as a result of carbon disulfide poisoning, have been reported in Italy and 21 cases were described in the United States. Hamilton records extrapyramidal involvement in 30% of the cases of CS_2 poisoning.

Tremors

SIXTEEN cases presented tremors, and in 14 this was localized to the fingers of the outstretched hands. In one, tremors of the eyelids and tongue were visible and in another, generalized throughout the body. The tremors were usually fine and cease with intentional movement and with complete relaxation. It appeared to be of an asthenic type and was a manifestation of generalized weakness rather than a specific sign of extrapyramidal involvement.

Hemiparesis

IN ONE case, polyneuritis was associated with light left hemiparesis. The worker had paresthesia of the left side of the body, a loss in strength of the upper and lower left extremities, and a clumsy gait.

Headache and Vertigo

HEADACHE was present among 19 workers and 18 complained of dizziness. Seven experienced headache without vertigo, and six had dizziness without the cephalia.

Insomnia was reported by only four workers.

Sexual Disturbances

ALTHOUGH the findings encountered by other writers have varied, 17 of the present series complained spontaneously of a diminution of sexual function. The improvement of sexual disturbances always coincided with the improvement of the patient generally and supports the theory of Ranelletti which includes sexual weakness in the general picture of depression of the nervous system.

Gastric Disturbances

TWENTY-EIGHT workers of the series being reported, complained of gastric disturbances, either limited to simple anorexia or gastric pain. Diarrhea was present in some and one experienced eructations and repeated emesis.

Air Concentration of Carbon Disulfide

AS MEASUREMENTS were conducted by the methods suggested by the English Ministry of Labor (colorimetric reaction of carbon disulfide with diethylamine and acetate of copper), determinations were made only during the daytime. The following concentrations were encountered:

Churn department: Air concentration, 0.11 to 0.87 mg. per liter; cases of intoxication, 10.

Staple-spinning department: Air concentration, 0.22 to 1 mg. per liter; cases of intoxication, nine.

Staple-bleaching department: Air concentration, 0.80 to 2.5 mg. per liter; cases of intoxication, 30.

Vacuum-washing-of-yarn-bobbins department: Air concentration, 0.15 to 0.75 mg. per liter; cases of intoxication, four.

Mixing department: Air concentration, 0.11 to 0.16 mg. per liter; no cases.

Filtration department: Air concentration, 0.20 to 0.22 mg. per liter; no cases.

Yarn-drying-and-centrifuge department: Air concentration, 0.04 to 0.1 mg. per liter; no cases.

Yarn-spinning department: Air concentration, 0.11 to 0.22 mg. per liter; no cases.

CONCLUSIONS can be drawn from comparison of the concentration of CS_2 and the frequency of intoxication:

1. Concentrations of CS_2 greater than 0.5 mg. per liter up to 2.5 mg. per liter intoxication daily for four hours cause chronic intoxication after a few months of work—acute intoxications or those with psychosis are exceptional.

2. Concentrations of 0.35 to 0.50 mg. per liter cause chronic intoxication, which develops usually after more than one year's work.

3. Concentrations of 0.18 to 0.35 mg. per liter cause only sporadic cases of mild intoxication.

4. Concentrations of less than 0.15 mg. per liter never cause intoxication.

The maximum allowable concentration, in the most hazardous departments, can be fixed at 0.15 mg. per liter, and 0.10 mg. per liter can be considered as a safe concentration.

Summary

ONE HUNDRED cases of carbon disulfide intoxication are reported, having occurred from 1940 to 1942, in two large plants manufacturing synthetic textile fibers. Of these cases, 10 were from the churn department, 72 from the staple-bleaching department, nine from staple-cleaning, five from vacuum washing of yarn bobbins, and four from other departments. In many cases symptoms developed after just a few months at work—17 cases, less than six months, and, in 41, less than a year's time.

The majority of the cases of poisoning occurred in the processing of staple fiber and particularly in the process of washing and desulphuring the fiber.

The frequent manifestations were: polyneuritis, 88; gastric disturbances, 28; headache and vertigo, 18; sexual disturbance, 16; myopathic changes, 15; tremors, 15; psychoses, 6; extrapyramidal disturbances, 3; optic neuritis, 2; and hemiparesis, 1 case.

The symptomatology is described and discussed and the polyneuritis was found to be of long duration, often becoming more severe even after work has ceased. Re-examination of 13 cases of partial disability because of polyneuritis, conducted after three to five years, indicated that five cases had become worse, four remained stationary, three had improved, and one was completely well.

Concentrations were related to the number, degree and rapidity of the cases encountered. It was observed concentrations of more than 0.50 mg. up to 2.50 mg. per liter may cause serious intoxication in a few months time; 0.35 to 0.50 mg. per liter may cause the appearance of symptoms after more than one year of work; 0.18 to 0.35 mg. per liter, only rarely are causes of mild intoxication, and concentrations under 0.15 mg. per liter have never produced symptoms.

It is concluded that a level of 0.15 mg. per liter is the maximum allowable, and concentrations of 0.10 mg. per liter can be considered safe.

Standing Orders

STANDING orders are a matter of such importance to industrial nursing that the AAIN recently formed a committee to study the question, and invited the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS and the Industrial Health Council of the American Medical Association to appoint representatives to work with them. Two meetings have been held. It was revealed that standing orders are a matter of greater complexity for the nurse in industry than for the nurse anywhere else. The old idea that all that is needed is a doctor's signature to routine orders which authorize certain routine treatments is not sound. Such orders do not provide legal protection for the nurse. Some nurses may believe that malpractice insurance protects them in their reliance on standing orders. This insurance does not protect a nurse who is guilty of practicing medicine. We need greatly a new concept of the purpose of standing orders and all the factors involved in their use. For example, the nurse who wishes to apply a treatment from her standing orders must first recognize a specific condition and thereby technically make a diagnosis. Thus she "practices medicine." This question of the line of demarcation between the practice of medicine and that of nursing (a question never completely settled because of its fluid nature) is more acute for both professions today than it has ever been. The giant strides of medical science, plus personnel shortages, are resulting in pressures on nurses to do things which under some medical practice acts could be termed illegal. The *American Journal of Nursing* stated editorially that 18 procedures once the practice of medicine now are done by nurses under doctors' orders. The industrial nurses' situation with regard to this is further complicated by the following factors: (1) Industrial nursing is our most complex form of nursing. It includes, in its entirety, the whole gamut of hospital, health and office nursing. It involves, therefore, a considerable number of activities that mesh with many fields of work. (2) The industrial nurse, especially in the small plant, often works with the physician only in intermittent attendance—or not at all. The committee's discussion on these points brought out the need for a new philosophy based on a consideration of: (a) the unique position of the nurse in industry; (b) the variations and limitations of state medical and nursing practice acts; (c) the variations of state compensation and labor laws; (d) the attitudes of nurses, of county and state medical societies, individual physicians and compensation doctors on standing orders for nurses. All of these lead to the core of the problem—What Constitutes Medical Direction? The Committee has made plans for considerable study of this question. It hopes to bring out the truths and develop the actions that will establish sound policies and principles of medical-nursing relationships. Joint discussion and action are essential, for nurses cannot follow a new set of principles regarding treatments of workers in the doctor's absence until these principles are first established by the doctors.

—From *A.A.I.N. Newsletter*, 1:7, November, 1949.

The New Federal Census of Manufacturers

RUSSELL L. ROBERTSON,
Detroit, Michigan

IN 1950 the United States Department of Commerce presented its first Census of Manufacturers since 1939. The compilation now available covers the year 1947. The omission during that long interval chiefly may be attributed to military expediency, although it is manifest that any compilation during the war years and shortly thereafter would have been so distorted as to provide little valid information for appropriate comparison with earlier arrangements. A census of this type was inaugurated in 1809 and has continued somewhat regularly thereafter. During the first four decades of this century the interval was only two years. In addition, the Department of Commerce has issued a publication, "County Business Patterns, First Quarter, 1948." The contents of this publication, with respect to business establishments, employment, and such, are based upon taxable payrolls by industry groups in relation to Old-Age and Survivors Insurance Program. Both of these publications and others similar have recognized limitations as to accuracy, completeness of coverage, etc., but none is known to militate against the application of these statistical arrangements in the contemplation of occupational health matters.

No one of the objectives of these statistical publications is directly concerned with occupational health, medical departments, distribution of industrial physicians and nurses, etc. Notwithstanding, many data may be found related to the scope of occupational medicine .... data as to the size of manufacturing establishments, the geographical distribution of centers of large industries, the types of industry requiring large operations versus those regularly carried out through small-scale operations.

It is believed to be true that for no single industrial county within the United States does there exist complete information as to the extent and nature of industrial medical activities. While this Census of Manufacturers fails to embrace this information, by implication it indicates the opportunity and need for such records.

In reviewing the publications on occupational medicine during the previous 20 years, it has been found that a large number have been directed to the requirements of medical services in small plants. Manifestly, many such publications would have been aided by factual statements as to the number of small plants in various sized categories. Just such records become available in these new reports which present elaborate data on both small and large plants in the aggregate, by states, by industries, by sex, etc.

BELOW are presented various specimen tabulations indicative of the contents deriving from these official documents. These statistics are presented solely for the purpose of making them available to authors and compilers within the field of occupational medicine. A wider objective is to indicate that far more extensive records are available in these reports themselves, located in all larger libraries.

There is reason to believe that, in a number of industries, the female labor force outnumbers the male. (Recent exact figures are not available.) The number includes the following:

Under Manufacturing: Tobacco Products, Knit Goods, Apparel and other Fabricated Textiles.

Under Public Utilities: Communication (chiefly Telephone).

Under Wholesale and Retail Trade: General Merchandise and Variety Stores.

Under Personal Services: Domestic Service, Hotels and Lodging Places.

Under Professional Services: Electrical Services, Medical and other Health Services.

Domestic service is the one category in which women grossly outnumber men. It is possible that the earlier figure of 88% of the total number in domestic service still represents women.

RUNNING through these numerous Federal documents are groups and classifications well related to the objectives of the compilers but at times possibly confusing to those less versed.

TABLE I.
TOTAL POPULATION IN THE UNITED STATES
1947 AND 1948
(Thousands of persons, as of July 1)

		Total	Under 15 Years of Age	15 Years of Age and Over
1947	Total	144,896	38,244	106,652
	Male	72,211	19,496	52,715
	Female	72,685	18,748	53,937
1948	Total	147,434	39,742	107,692
	Male	73,421	20,273	53,148
	Female	74,013	19,469	54,544

*Includes members of Armed Services abroad.
Source: U.S. Census Bureau

From The Industrial Health Conservancy Laboratories, Detroit, Michigan.

TABLE II.
U. S. CIVILIAN LABOR FORCE,* 1947-1949
(Annual Average in thousands of persons)

			EMPLOYED		UNEMPLOYED
			In Agriculture	Non-agricultural Industries	
1947	Total	60,168	8,266	49,761	2,141
	Male	43,272	6,952	34,725	1,595
	Female	16,896	1,314	15,036	546
1948	Total	61,441	7,973	51,405	2,063
	Male	43,858	6,633	35,795	1,430
	Female	17,583	1,340	15,610	633
1949	Total	62,105	8,026	50,684	3,395
	Male	44,075	6,638	35,023	2,414
	Female	18,030	1,388	15,661	981

*U.S. civilian labor force includes those of the civilian noninstitutional population 14 years of age and over who are classified as employed or unemployed in accordance with Census Bureau definitions of these terms.
Source: U.S. Census Bureau.

TABLE I-A. JANUARY—1950

	Total Men and Women	Number of Women	Per Cent Women	Number of Men	Per Cent Men
Population (14 years and over)	110,208,000	56,096,000	50.9	54,112,000	49.1
Civilian Labor Force	65,500,000	17,712,000	28.8	43,788,000	71.2
Employed:	56,876,000	16,494,000	29.0	40,382,000	71.0
In Agriculture	6,188,000	625,000	10.1	5,563,000	89.9
In Nonagricultural industries	50,700,000	15,869,000	31.3	34,831,000	68.7
Unemployed	4,478,000	1,218,00	27.2	3,260,000	72.8
Armed Forces	1,400,000	21,000	1.5	1,379,000	98.5
Nonworkers	47,420,000	38,363,000	80.9	9,057,000	19.1

(U.S. Department of Commerce, Bureau of the Census)

TABLE III.

SIZE OF BUSINESS ESTABLISHMENTS IN UNITED STATES, FIRST QUARTER, 1947

	Number of Reporting Units and Number of Employees				
	Total	0-19	20-99	100-499	500 & More
United States	2,512,280	2,277,029 (90.64%)	199,500 (7.58%)	37,514 (1.49%)	7,237 (0.29%)
Agriculture, Forestry & Fishing	12,477	11,992	440	44	1
Mining	25,609	19,752	4,185	1,355	317
Contract Construction	180,619	164,660	13,956	1,832	171
Manufacturing	255,184 (10.16%)	171,669 (67.27%)	58,902 (23.08%)	19,818 (7.77%)	4,796 (1.88%)
Food and kindred products	35,761	24,696	8,383	2,355	327
Textile mill products	8,894	3,668	2,658	1,932	636
Printing, publishing	28,940	23,534	4,249	,976	181
Chemicals & allied products	10,507	6,648	2,685	944	230
Leather & leather products	5,681	3,115	1,605	822	139
Stone, clay & glass products	10,703	7,720	2,015	808	160
Blast furnaces, steel works	369	58	46	104	161
Iron & steel foundries	1,824	464	804	456	100
Machinery (excluding electrical)	18,298	11,702	4,312	1,699	585
Electrical machinery	4,338	2,158	1,137	693	350
Motor vehicles & equipment	1,871	929	489	231	222
All others	127,998	86,976	30,519	8,798	1,705
Public Utilities	95,169	80,117	11,590	2,789	673
Interstate Railroads*	21	18	2	1	—
Communication	8,754	6,463	1,554	533	204
All others	86,394	73,636	10,034	2,255	469
Wholesale Trade	235,477	207,321	25,070	2,862	224
Retail Trade	862,876	817,184	41,010	4,040	642
Finance, Insurance & Real Estate	216,250	203,797	10,470	1,767	216
Service Industries	574,468	547,020	24,305	2,948	195
Hotels	20,995	17,753	2,411	736	95
Education Institutions	3,106	2,851	237	17	1
Medical & other Health Services	100,768	99,585	1,068	111	4
All others	449,599	426,831	20,589	2,084	95
Not elsewhere classified	6,807	6,699	92	15	1
Unclassified	47,344	46,819	480	44	1

*Scope of Social Security Act does not include most railroad employees. Other large segments missing from industry group totals are: (1) Self employment, (2) Employment in agriculture, (3) Employment in Federal, state or local government, (4) Domestic service in a private home. Source: Social Security Administration.

TABLE III.-A

REPORTING UNITS, BY SIZE GROUPS

EMPLOYMENT AND TAXABLE PAYROLLS, BY INDUSTRY, FIRST QUARTER, 1948

	Employment Mid-March 1948	Number of Reporting Units							
		Total	With 0—3 Employees	With 4—7 Employees	With 8—19 Employees	With 20—49 Employees	With 50—99 Employees	With 100—499 Employees	With 500 or More Employees
U.S. TOTAL	35,627,497	2,674,931	1,529,364 (57.17%)	550,428 (20.58%)	350,686 (13.11%)	148,558 (5.55%)	50,395 (1.88%)	38,141 (1.43%)	7,359 (0.28%)
MANUFACTURING	15,119,327 (42.44%)	267,020 (9.98%)	72,137 (27.02%)	51,787 (19.39%)	58,116 (21.76%)	40,773 (15.27%)	19,517 (7.31%)	19,881 (7.45%)	4,809 (1.80%)

The difference between "U.S. Total" and "Manufacturing" represents the figures for the following categories: Agriculture, Forestry and Fishing; Mining; Contract Construction; Public Utilities; Wholesale Trade; Retail Trade; Finance; Insurance and Real Estate; Service Industries not elsewhere Classified, and Unclassified.

TABLE IV.

SELECTED GENERAL STATISTICS BY SIZE OF ESTABLISHMENT FOR THE UNITED STATES: 1947

"TOILET PREPARATIONS" (CITED AS AN EXAMPLE) SHOWING TOTAL NUMBER OF EMPLOYEES BY SIZE GROUP

	Total, all establishments	Establishments with an average of—									
		1—4 employees	5—9 employees	10—19 employees	20—49 employees	50—99 employees	100—249 employees	250—499 employees	500—999 employees	1,000—2,499 employees	2,500 employees and over
No. of establishments	718	305	140	83	87	41	36	15	10	1	—
No. of employees (average for the year)	26,023	641	896	1,121	2,704	2,788	5,564	5,252	7,058	—*	—

*The total number of employees is not disclosed when such disclosure might identify individual companies.

The Givaudanian, February, 1950.

For example, an industry devoted to the production of a lather shaving agent is classed as soap manufacturing, but if the agent is brushless, its manufacturer is included in the cosmetic group.

It is emphasized that these few tables fail fully to present the limitations and restrictions set forth in the parent publications. For exactness, recourse should be had to these original publications which, in truth, through hundreds of categories, provide statistical information with implications for industrial medicine. Immediately these statistical arrangements should attract attention from the single fact that they reveal that 98.29% of all of the nation's 2,674,931 places of business have work forces of less than 100 employees.

The "Coffee Break"

AS FAR back as 1936, Drs. Howard W. Haggard and Leon A. Greenberg, of Yale University, made a study, "The Influence of Frequency of Meals upon Physical Efficiency and Industrial Productivity," which established that a change from three meals a day to five abolished normal falls in production in the late hours of the morning and afternoon. The Haggard-Greenberg finding, based on a study in a Connecticut factory, made the qualification that the total amount of food must remain the same and the quality should be unchanged. The doctors, both connected with the Yale Laboratory of Applied Physiology, also found that muscular efficiency is lowest before breakfast and that if no breakfast is taken, efficiency remains at this low level. Apparently the lesson taught by this study and others of a similar nature, has been taken to heart by American business. A study made by the National Office Management Association and a more casual inquiry just completed by the Field Research Division of the Paper Cup and Container Institute, Inc., make it evident that the "coffee break" or between-meal snack is well established in business places. The NOMA report, covering 836 companies in a dozen varied fields of many different sizes in all parts of the country, says in part: "Employees were permitted to obtain between-meal refreshments by three out of four companies. Since more than half the companies having a rule against snacks said rule breaking was tolerated, actually only one company in nine really forbade the practice. The practice was most common in offices having fewer than 25 employees. "Snacks improved morale and increased efficiency in the opinion of the majority of the companies. Only 26 had made actual surveys or tests. Over half the companies, however, could point to 10 or more years of experience in substantiating their opinion.... Nine out of 10 companies believed snacks improved morale; eight of 10 believed they increased efficiency; on the negative side, seven out of 10 did not think snacks reduced turnover, eight out of 10 could see no assistance in reducing absenteeism." NOMA also found half of the companies prescribed regular rest periods with only 30 companies advising they permitted snack periods in addition to rest periods. On the affirmative side, an oil company in the Midwest commented: "We think such snack periods more than pay their way and are here to stay." Those who reported negatively often said the practice has been abolished because employees abused the privilege. A much smaller sampling of industry was undertaken by the Field Research Division which obtained 57 replies, mostly from large industries. Of these, 26 reported that mid-morning coffee was a custom in their offices, 31 said "No." Only 12 reported that the snack period was permitted in the plant and 35 reported in the negative. The figures in all the study vary a bit because some of the firms reporting have an office only. General Foods Corporation says that it operates more than 100 plants and offices in the United States and Canada and that 67% have formal rest periods at which time employees may obtain coffee if they like. As to the popularity of coffee with employees, the Studebaker Corporation reports that about one in four of its office employees takes coffee during the morning rest period. Operators of coffee vending machines find that they can count on sales of about one cup of coffee daily for each two employees. In 28 of the 38 offices and plants where coffee breaks are permitted, employees pay for their own coffee at prices ranging from five to seven cents (the usual price range) to 10 and 15 cents in those offices where coffee is sent in from drug stores or luncheonettes. Companies with exceptional employee relationships are normally found to be among the most enthusiastic in favor of snack periods. For instance, Charles P. McCormick, president of McCormick & Co., Baltimore, the world's largest tea and spice house, is credited by the National Association of Manufacturers, in its publication *Trends* with establishing one of the finest employee relationships in the country. *Trends* mentions the company's profit-sharing plan, pension plan, and medical aid, remarking that as a result of all these things employee turnover has dropped from 33% to 4%. The magazine continues: "Curiously the growth of McCormick seems to bear a strange relation to the benefits. For example, Charlie's decision to devote 5% of the working day to rest and a cup of McCormick's tea sent production up 9%." As to the value of the snack periods, 27 companies reported that the principal value was in promoting a friendlier feeling. Next greatest benefit, reported by 17, was in reduction of fatigue with a resultant improved safety situation. There was some disagreement as to the value of the snacks in increasing production; seven reporting increases, two reduced production, and four no change. One personnel manager commented that prejudice, against rest periods and snacks is strongest among older executives who have come up through the ranks and are opposed to any change in the way things were done when they were at the bench or machine. Younger executives are most strongly in favor of snacks and rest periods. Survey of comments of many of those who established coffee breaks bring out this point repeatedly: They set out to do something for their employees, found they were bringing even greater benefits to themselves.

—From *Single Service News*, quoted in *Industrial Health*, Health League of Canada, February, 1950.

The Problem of Hypertension

JAMES H. HUTTON, M.D.,
Chicago

PROBABLY the members of this audience are more keenly aware than most practitioners of the fact that hypertensive disease or hypertension is our most pressing medical problem. Executives, business men and clerical workers who are victims of this disorder may continue in their usual jobs until they are disabled. Men in train service or operating high-speed dangerous machinery may be taken off their jobs or have their privileges sharply curtailed before hypertension has made serious inroads on their health. You may find yourselves compelled to separate a man from the job by which he supports himself and his family. Hypertension causes more deaths annually in certain age groups than cancer, diabetes and tuberculosis combined.

Etiology

HYPERTENSION is said to have been found in association with 60 different conditions[1] and yet its primary cause is unknown. It seems likely in the light of our present knowledge that we may find hypertension caused by many things—somewhat like fever. From the beginning the kidney has been the organ most often blamed for hypertension. But this idea seemed to be losing adherents since only 10% of the victims of hypertension died of renal insufficiency. However, when Goldblatt[2] announced that he could produce varying degrees of hypertension by varying degrees of renal ischemia, the kidney again occupied the center of the stage. The production of kidney extract[3] that would reduce blood pressure and relieve some of the symptoms and consequences of hypertension seemed to make the case against the kidney complete. However, we do not yet know how an ischemic kidney causes hypertension in the laboratory animal. It has been shown that no renin can be found in the blood in cases of essential hypertension though it can be found in renal hypertension.[4] Nor is there any increase in the globulin precursor of angiotonin.[4] Kidney extracts were found to have many undesirable side effects and did not give the relief from hypertension in man that it was hoped they would produce. In spite of all this a great many investigators still feel that the kidney is at fault. Many other ideas have been advanced but none of them adequately explains the cause.

Treatment

AS LONG as we do not know the cause of a disease our treatment remains empiric and usually unsatisfactory, as is true in hypertension.

Treatment may be discussed under the headings: Diet, Drugs, Psychotherapy and Surgery.

Presented at the Sixty-Second Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, April 5, 1950.

DIET: In the good old days red meat especially was forbidden the victim. Why red meat should have been more sinful than any other was never made clear. Even today many practitioners urge a restriction of proteid. This idea has probably done quite as much harm as good.

Then it was noted that many victims of hypertension were also overweight. This led to the conclusion that the obesity was, in some measure at least, responsible for the hypertension. Consequently obese patients had their caloric intake reduced in order to lose weight. Obesity is certainly no evidence of good health and it should be corrected in so far as we are able to do so. But there is little convincing evidence that weight loss is accompanied by any considerable improvement in hypertension. We do not know the cause of obesity nor whether there is any relation between it and hypertension except that they are sometimes present in the same person. Of course every fat person got that way by eating more than he needed, but what induced him to do that we do not know. Recently it has been shown[5] that patients who received ACTH consumed more food and gained weight and there was some suggestion that these hormones might induce hypertension. So it may well be that we shall eventually find that hypertension and obesity sometimes arise from the same cause.

The latest additions along this line are the low sodium (700 mg. or less) and the rice diet. It is suggested that the rice diet owes its efficacy to the low sodium content.

DRUGS: A host of these have been used. The most useful have been the barbiturates, the vasodilators and the cyanates. The last are dangerous even when laboratory facilities are available for determining the blood level of cyanates. In recent years we have been given some which are capable of blocking vasoconstrictor nerve impulses. Among these are tetraethylammonium chloride, dihydroergotamine, dehydroergocornine and dibenamine. The last named is useful in helping to determine whether an adrenal tumor is present. It was thought that the use of dibenamine might lead to the discovery of adrenal tumors not otherwise suspected. Certain veratrum derivatives are currently being used.

PSYCHOTHERAPY: This is undoubtedly of some help in most cases, but probably is rarely curative.

SURGERY: When Goldblatt showed that unilateral renal ischemia could produce hypertension, the thought evidently occurred to many surgeons that perhaps one diseased kidney might be responsible for cases of human hypertension. Consequently an intensified study was made of the genito-urinary tract and many unilaterally diseased kidneys were removed in the hope of

relieving the coincident hypertension. When no such happy event regularly followed these operations, their popularity declined. Nowadays I believe that while diseased kidneys are removed the operation is not done with the idea of curing any hypertension the patient may have.

Operations on the sympathetic system have enjoyed the greatest popularity, not only among the surgeons but among internists as well. In order to make them more effective their scope has been increased and more and more of the sympathetic chains and related structures have been removed. However it is now evident that no matter how much good the operation may do in some cases, it is not the answer to the hypertension problem. At various times it has been suggested that any major operation would be followed by the same drop in blood pressure as followed sympathectomy. Undoubtedly this view has some merit. One gains the impression from the study of the literature that sympathectomy is enjoying a receding wave of popularity. It is to be hoped that we shall not fly from one extreme to the other and abandon the operation altogether. Undoubtedly it is a procedure that should be used in some cases until we devise something better.

The Endocrine Aspect of Hypertension

THIS is probably a small part of this problem but a much neglected one. For more than a decade there have been sufficient data in the literature to indicate that the pituitary and adrenals might be responsible for some cases of hypertension with other of the endocrines playing lesser roles in this respect. The data are too voluminous to present in detail, but the most important points may be summarized.

Hypertension is often found, during the active stage, in all forms of hyperpituitarism (gigantism—acromegaly—basophilism). Diabetes is frequently found in the same conditions. On the other hand, hypopituitarism is accompanied by lowered blood pressure and an increased tolerance for glucose.

Tumors of the adrenals involving either the cortex or the medulla are often associated with hypertension. Medullary tumors were once thought to be associated with paroxysmal hypertension, as indeed they are, but it is now known that tumors of either the medulla or the cortex may be associated with persistent hypertension.

Hyperthyroidism is often accompanied by hypertension. Graves' disease regularly shows a rise in systolic with little change in diastolic pressure, while adenomatous goiter with hyperthyroidism is often accompanied by hypertension indistinguishable from essential hypertension. Thyroidectomy is often followed by correction of the hypertension.

Myxedema and lesser degrees of hypothyroidism are sometimes associated with hypertension. In these the administration of adequate doses of thyroid will sometimes relieve the hypertension as well as the hypothyroidism. We have seen only seven such cases.

Griffith[6] produced permanent hypertension in rats by intraperitoneal injections of small doses of pitressin. Leimdorfer[7] produced hypertension in rats by intrathecal injections of posterior pituitary extract. Cardiac hypertrophy and nephrosclerosis have been produced in rats by the administration of desoxycorticosterone acetate and sodium chloride.[8] Selye[8] suggested that every case of renal hypertension be investigated as to the possibility that the adrenals might be partly responsible for the patient's trouble.

TREATMENT: Acromegaly, gigantism and basophilism have their own indications for treatment, either by the surgeon or the roentgenologist. Griffeth et al[6,9] report that the antidiuretic substance of the posterior lobe disappeared from the blood of hypertensives for six months following irradiation of the pituitary. The blood pressure fell from 230 to 130. Three weeks after the antidiuretic substance reappeared, the blood pressure rose to 200. After further irradiation it disappeared and the blood pressure fell to 128. Papilledema disappeared in two of their cases following irradiation.

The same group report that some cases are benefited by injections of pitressin.[10] They believe this result is due to the suppression of pituitary function by the injections.

We have seen 16 patients whose blood pressure was materially reduced by the administration of thyroid and injections of anterior and posterior pituitary extracts. All of these patients were obese and all of them lost weight. We do not believe the weight loss caused the fall in blood pressure, as it occurred before there was any significant loss.

At various times since 1914 the roentgenologists have irradiated the adrenals for hypertension. These efforts were usually futile. For more than 20 years the gynecologists and roentgenologists have been applying small doses of x-ray irradiation to the pituitary and ovaries in the treatment of various menstrual disorders. These treatments have been very successful and no adverse results have been seen. Following their example, since 1932 we have been irradiating the pituitary and adrenal regions with small doses of x-ray for hypertension. The factors found most successful are as follows: 120 kilovolts; 2 mm. aluminum filter; 50 cm. skin target distance; 3 milliamperes and about 50 r to each area treated. Irradiation is applied to three areas at each sitting—to both sides of the pituitary through a 10 x 10 cm. portal and to the adrenals through a common portal 15 x 15 cm.

Heavier doses, i.e., more than 100 r, have not been helpful. Why such small doses should be helpful when larger ones are not, we do not know. However, small doses of irradiation will kill cultures of tuberculosis or colon bacilli while heavy doses have no apparent effect. Also small

doses of x-ray will abort a boil or carbuncle while large doses have no apparent effect.

We have records of over 800 patients treated in this way. Slightly more than 500 were seen in and around Chicago; 309 were reported by other workers. In about 90% of the cases the patients reported relief of their most distressing symptoms, particularly headache, vertigo, irritability, insomnia, precordial distress and nervous tension. There was a notable fall in blood pressure (30 mm. or more systolic and 20 mm. or more in the diastolic) in about 70% of the cases.

We rarely give treatments at less than weekly intervals. We do not give another treatment so long as the good effects of previous treatment persist. By watching the patient and repeating treatment as indicated by a rise in blood pressure or recurrence of symptoms the improved status can be maintained over several years. Eventually even patients who respond well to these treatments become resistant to them and neither blood pressure nor symptoms are affected by further x-ray treatment. Usually the symptoms respond more strikingly than the blood pressure. Some patients space their own treatments, returning for another as soon as their symptoms begin to bother them. We have seen no good effects follow these treatments in cases of malignant hypertension.

An example of the relief these treatments give is afforded by a 37-year-old woman who had moderate hypertension with frequent attacks of substernal distress for which she took glyceryl trinitrate tablets. From April to October, 1944, she took 650 tablets for these attacks. She had an x-ray treatment November 1, 1944, and from then till May 10, 1945, she required only three tablets.

Dr. W. Raab[11] has suggested irradiating the adrenals for anginal attacks. Such treatments seem very helpful in some cases. He uses somewhat heavier doses than we have employed.

Dr. Leonard G. Rowntree[12] has suggested that irradiating the pituitary and adrenal regions at the same time has some sort of balancing effect. In view of our increased knowledge of pituitary and adrenal physiology it isn't difficult to visualize the irradiation as causing some change in the hormonal output of these organs.

At this time some 28 different hormones have been isolated from the adrenal cortex. But the amorphous residue from which these have been extracted is still potent in maintaining the life of adrenalectomized animals. Those that have been identified may be divided into three groups depending on their structure and their spheres of influence.

1. Those that predominantly affect electrolyte and fluid balance. These do not have an oxygen molecule at carbon 11 and are known as desoxycorticosterones.

2. Those primarily concerned with the intermediary metabolism of proteid and carbohydrate. These have an oxygen molecule at carbon 11 and are known as corticosterones. Compound E belongs to this group.

3. Those which have an androgenic and anabolic effect. These are related in structure to testosterone but have an oxygen molecule in position 11.

But whatever the mechanism by which small doses of irradiation directed at the pituitary and adrenals so favorably influences hypertension in some patients, there can no longer be any question about its doing so.

Certain precautions should be observed in using this treatment. The dose should always be small. Griffith et al use much heavier doses, but they irradiate only the pituitary and only in those cases showing an excess of antidiuretic substance in the blood. Treatment should not be given too frequently. As long as the good effects of a previous treatment persist, i.e., if there has been relief of symptoms and a fall in blood pressure, no more treatment should be given until there is a recurrence of symptoms or rise in blood pressure. For some unknown reason it is better not to give a treatment during or in the week preceding the menstrual period.

Coincident with these treatments one may use any other treatment that seems desirable. We have seen several patients who had benefited temporarily from a sympathectomy. When their blood pressure rose and symptoms returned they were quickly relieved by x-ray treatment.

Harrison[13] suggested that no operative work should be done in the sympathetic system until the effect of x-ray had been tried. He thought if the x-ray failed, the surgeon was not likely to do any better. However we have had a few cases that were completely resistant to x-ray therapy but were greatly benefited by sympathectomy.

IN CONCLUSION it may be safely said that no case of hypertension has been thoroughly studied until the patient's endocrine status has been determined. Some cases are greatly benefited by the administration of thyroid and pituitary extracts. Irradiation of the pituitary and adrenal regions is one of our most helpful procedures. It is safe, easily carried out, widely available, carries no mortality rate and does not require that the patient be hospitalized. It does not conflict with any other treatment the physician may wish to use. Like all other treatment, the symptomatic relief exceeds the fall in blood pressure.

Bibliography

1. BARKER, M. HERBERT: Hypertension. Fifth in the 1946-47 Series of Semimonthly Afternoon Lectures by Fellows of the Institute of Medicine of Chicago.

2. GOLDBLATT, HARRY: Editorial: The Pathogenesis of Hypertension, *J.A.M.A.*, 110:49, January 1, 1938. GOLDBLATT, HARRY, LYNCH, JAMES, HANZAL, RAMON, and SUMMERVILLE, WARD W.: Studies in Experimental Hypertension. I. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, *J. Experimental Med.*, 59:374, March, 1934.

3. PAGE, IRVING H.; HELMAR, O. M.; KOHLSTAEDT, K. G.; FOUTS, P. J., and KEMP, G. F.: Reduction of Arterial Blood Pressure of Hypertensive Patients and Animals with Extracts of Kidneys. *J. Experimental Med.*, 73:7, January 1, 1941.

4. WELCH, NORMAL A.: Medical Aspects of Hypertension. *New England Med. J.*, 235:752, November 21, 1946.

5. SPRAGUE, RANDALL G., POWER, MARSCHELLE H., MASON, HAROLD L., ALBERT A., MATHIESON, DON R., HENCH, PHILIP S., KENDALL, EDWARD C., SLOCUMB, CHARLES H., and POLLEY, HOWARD F.: Observations on the Physiologic Effects of Cortisone and ACTH in Man. *Arch. Int. Med.*, 85:199, February, 1950.

6. GROFFOTH, J. Q., JR., CORBIT, H. O'BRIEN, RUTHERFORD, R. B., and LINDAUER, M. A.: Studies on Criteria for Classification of Arterial Hypertension. V. Types of Hypertension Associated with the Presence of Posterior Pituitary Substance. *Am. Heart J.*, 21:77, January, 1941.

7. LEIMDORFER, A.: Ueber die Wirkung Intralumbelein Gefuhrter Hypophysenpraparate auf den Bluddruck. *Arch. f. exper. Path. u. Pharmakol.*, 118:253, 1926.

8. SELYE, HANS, and HALL, C. E.: Production of Nephrosclerosis and Cardiac Hypertrophy in the Rat by Desoxycorticosterone Acetate Overdosage. *Am. Heart J.*, 27:338, March, 1944.

9. PENDERGRASS, EUGENE P., HODES, PHILLIP, JR., and GRIFFITH, JOHN Q., JR.: Irradiation of the Pituitary Gland in Posterior Lobe Hyperfunction Controlled by Biologic Tests. *Am. J. Roentgen.*, 46:673-682, November, 1941.

10. GRIFFITH, J. Q., JR., PADIS, N., and ANTHONY E.: Selection of Patients with Arterial Hypertension for Treatment by Repeated Injections of Pitressin. *Am. J. Med. Sc.*, 212:31-34, July, 1946.

11. RAAB, W.: Roentgen Treatment of the Adrenal Glands in Angina Pectoris (One Hundred Cases). *Ann. Int. Med.* 14:688-710, October, 1940.

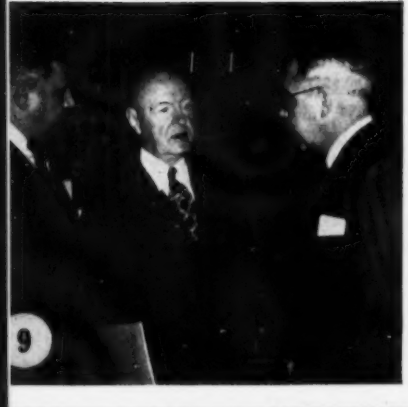
12. ROWNTREE, LEONARD G.: Personal communication.

13. HARRISON, BEDE J. MICHAEL: Textbook of Roentgenology, Baltimore, William Wood & Co., 1936, p. 195.

Pneumoconiosis and Infection

THE relationship of pneumoconiosis and lung infection has been the subject of much study and investigation in the past 25 years. Although most of these studies have concerned themselves with silicosis and tuberculosis, other pneumoconioses and other lung infections have been scrutinized more recently as to their possible relationship, but with no relationship observed. This report limits itself largely to the silicosis-tuberculosis combination. In spite of the apparent close relationship between silicosis and tuberculosis, only a small percentage of workers with silicosis actually are dying of tuberculosis today. Actual figures cannot be given from the group the author studied, but it is more in the range of 5 to 10% instead of the often quoted 75%, and the majority of those cases were of long-standing combined lesions. Superimposed tuberculosis on a previously uninfected silicotic lung still occurs occasionally, but it is becoming increasingly rare. Several important conclusions were drawn regarding pneumoconiosis and infection from the clinical observation of the cases cited in this report. (1) Pulmonary tuberculosis is the only infection which appears to be more prevalent in persons with silicosis than in other workers. (2) The effect of the silicosis is primarily on pre-existing tuberculous foci. If these are pathologically active, the silicosis tends to keep them active and to prevent healing, resulting in later slow spread of the combined lesion. (3) Such lesions usually are more chronic than in tuberculosis alone, and they slowly progress with excessive overgrowth of fibrous, tubercle bacilli not being liberated in the bronchial tree for many years and occasionally never. (4) Sanatorium care not only is unnecessary but inadvisable until the sputum or gastric contents show tubercle bacilli. (5) Streptomycin appears no more effective in halting the progression of silicotuberculosis than it does in chronic tuberculosis without silicosis. (6) Persons with clinically inactive silicotuberculosis should be kept at work in non-dusty atmospheres or at jobs where dust dissemination is well controlled. Such work, of course, should be within the limits of their physical capacity if they are partially disabled. (7) They should have frequent periodic examinations, at least every six months, including sputum and gastric cultures for tubercle bacilli. (8) The blood sedimentation rate is particularly indicative in conjunction with these periodic examinations. A significant increase in the rate which had been normal should make one suspect a developing pathologic activity of the walled-off infection. (9) The decided reduction in the past 10 years of the dust exposures in the dusty trades is having a profound effect on the development rate of silicosis and silicotuberculosis, to the extent that today new cases of silicotuberculosis are no longer seen except in the older workers who were exposed to the heavier dust concentrations in the past. (10) The increasing discovery and isolation of persons with active tuberculosis in the community as well as in industry also is helping to prevent new cases of silicotuberculosis to such an extent that it soon will cease to exist as an occupational disease. (11) The pessimism of the past regarding the prognosis of silicosis should be replaced by a more optimistic outlook in the vast majority of cases,

—Summary in *What's New in Public Health* of "Pneumoconiosis and Infection," by O. A. SANDER, M.D., in *J.A.M.A.*, November 19, 1949.



ASSOCIATION NEWS

The Industrial Physicians

THE 1950 CONFERENCE of the five cooperating organizations in Chicago last month was a news-making week. But the dates, April 22-29, were such that our publishing deadlines for this issue require us to postpone the beginning of the publication of the news until June. It is possible, however, to note here that the new Officers of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS are as follows: President, EDWARD H. CARLETON, M.D.; President-Elect, ADOLPH G. KAMMER, M.D.; First Vice-President, E. A. IRVIN, M.D.; Second Vice-President, GEORGE E. WILKINS, M.D.; Secretary, ARTHUR K. PETERSON, M.D.; Treasurer and Managing Director, EDWARD C. HOLMBLAD, M.D.; and that the new officers of the AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS are: President, LEONARD S. MORVAY, D.D.S; President-Elect, V. J. FORNEY, D.D.S., M.P.H.; Secretary, F. J. WALTERS, D.D.S.; Treasurer, E. G. SMITH, D.D.S. The full list of the 1950-51 Officers and Directors of both Associations will appear in the June issue in their usual places: A.A.I.P.&S. on page 4, and A.A.I.D. on page 10, of the front Section. Meanwhile one of the many excellent presentations, "Periodic Health Examination of Executives," by DR. S. CHARLES FRANCO, is included here, on page 213. Others are scheduled throughout the coming months, together with interpolations from time to time regarding convention highlights. At the Directors' Dinner, Tuesday evening, April 25, COLONEL WESLEY CINTRA COX reported on his visit to Buenos Aires last December to represent the Association at the First American Congress of Industrial Medicine.

The Railway Surgeons

THE Sixty-Second Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS at the Drake Hotel, Chicago, April 4-6, was a brilliant success. From the first session throughout the last, the presentations were received with unusual interest, and the intermissions to view the technical exhibits were profitable to all concerned. The program, under the direction of DR. CHESTER C. GUY, was an assemblage of speakers and subjects to command attention, but the close attention given them was in each instance a response to appreciation of the opportunity to hear an authoritative discussion of a timely and important phase of medical and surgical practice. Two of the papers appear in this issue: "The Use of Intravenous Procaine in Trauma," by DR. DAVID J. GRAUBARD and DR. HARRY V. SPAULDING, on page 235, and "The Problem of Hypertension," by DR. JAMES H. HUTTON, on page 246. More will follow in early issues.

At the Railway Surgeons' Meeting

(1) Dr. and Mrs. Raymond B. Kepner. Dr. Kepner is Chief Medical Officer, Chicago Burlington & Quincy, and Past-President of the Association. (2) Chester C. Guy, M.D., and Darwin Kirby, M.D., presiding. Dr. Guy is Chief of Surgery at Illinois Central Hospital, Chicago, and Secretary of the Association. Dr. Kirby is Surgeon for the Illinois Central at Champaign, Illinois, and Past-President of the Association. (3) Dr. and Mrs. John A. Cahill, and Arthur R. Metz, M.D. Dr. Cahill, newly elected President of the Association, is Surgeon for the Chicago, Milwaukee, St. Paul & Pacific at Dubuque, Iowa. Dr. Metz is Chief Surgeon, Chicago, Milwaukee, St. Paul & Pacific (Lines East), and Chairman of the Association's Executive Board. (4) Chester C. Guy, M.D., James W. Davis, M.D., Arthur R. Metz, M.D., and Darwin Kirby, M.D. Dr. Davis is identified with the Southern Railway and the Pennsylvania Railroad, and is head of the Davis Hospital at Statesville, North Carolina. (5) D. Ray Murdock, M.D. Dr. Murdock, newly elected Vice-President of the Association, is identified with the Pennsylvania Railroad at Greensburg, Pennsylvania. (6) Darwin Kirby, M.D., and John A. Cahill, M.D. (7) Jermyn F. McCahan, M.D., and Carl M. Peterson, M.D. Dr. Peterson is Secretary, and Dr. McCahan is Assistant Secretary, of the Council on Industrial Health of the American Medical Association. (8) C. J. Hunt, M.D., J. P. Cogley, M.D., Harry Oberhelman, M.D., and H. A. Spilman, M.D. Dr. Hunt is identified with the Chicago, Milwaukee, St. Paul & Pacific at Kansas City, Missouri; Dr. Cogley with the Chicago & North Western at Council Bluffs, Iowa. Dr. Harry Oberhelman is Professor and Chairman, Department of Surgery, Stritch School of Medicine, Loyola University, Chicago, and Attending Surgeon, Cook County and Mercy Hospitals. Dr. Spilman is identified with the Chicago Burlington & Quincy, and the Chicago, Milwaukee, St. Paul & Pacific at Ottumwa, Iowa. (9) Roger W. Poborsky, M. D., Kellogg Speed, M.D., and Chester C. Guy, M.D. Dr. Poborsky is identified with the Chicago, Burlington & Quincy, at Chicago. Dr. Kellogg Speed is Clinical Professor of Surgery (Rush) University of Illinois, College of Medicine, Chicago, and Attending Surgeon, Presbyterian Hospital, Chicago. (10) W. F. Strong, M.D., Merritt Jones, M.D., Henry Kessler, M.D., and Summer Koch, M.D. Dr. Strong is identified with the Chicago, Milwaukee, St. Paul & Pacific at Ontonagon, Michigan; Dr. Merritt Jones with the Chicago & North Western at Wausau, Wisconsin. Dr. Kessler is Director of Kessler Institute for Rehabilitation, West Orange, New Jersey. Dr. Koch is Professor of Surgery, Northwestern University Medical School, Chicago, and Attending Surgeon at Passavant Memorial Hospital, Chicago. (11) Keith A. Stratford, M.D., G. I. Uhrich, M.D. Dr. Stratford is identified with the Southern Pacific and Union Pacific at Ogden, Utah. Dr. Uhrich is with the Chicago, Milwaukee, St. Paul & Pacific at La Crosse, Wisconsin. (12) Mary Driscoll, C.R.I. & P., Helen Nourse, A.A.R.S., Ellen Latunen, C.M.St.P. & P., with Florence Thatcher, of the Chicago Convention Bureau. (13) Gertrude Schrup, C.B. & Q. (14) Robert Graham, M.D., and R. B. Zeller, M.D. Dr. Graham is Director of the Department of Sanitation & Surgery, Pullman Company, Chicago. Dr. Zeller is with the Illinois Central at Hazelhurst, Mississippi.

BOOKS

A Professional Service

MEDICAL BOOKS OF 1949, Mead Johnson & Company, Evansville, Indiana, 1950 edition, pp. 116, gratuitously distributed.

NOTHING is so complex as the absence of complexity. That is the dilemma of the present reviewer. Here is a small booklet, (180,000) already gratuitously distributed to nearly every physician in the land. Thus, there is no purpose to urge upon physicians the acquisition of a meritorious publication. There is no opportunity to serve the publisher since the publisher has no books for sale. No author is mentioned to whom a measure of charity might be extended should charity be needed. The situation is unique. Mead Johnson & Company for the twentieth time has distributed its annual edition cataloguing all or nearly all medical books for the year. Every book is photographed in miniature, and many of the always brief reviews, excellent in character, approach the miniature. By approximation, 2790 authors are mentioned by name and some 1391 books. If no other purpose was served, this compilation will reveal to all physicians the striking fecundity of their confreres who have taken pen in hand to the completion of large and small sized book publications. So numerous are the books and their authors that almost with shudder might one contemplate the total number of scientific magazine publications on medical topics and their authors. The real purpose of this review is to recognize and compliment the astuteness of a commercial producer of pharmaceuticals in providing so valuable an assemblage of information about books as a professional service. If this be advertising, it is the advertising of statesmen.

Ninth International Congress

THE PROCEEDINGS OF THE NINTH INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, John Wright & Sons Ltd., Bristol; Simpkin Marshall Ltd., London; The Williams & Wilkins Company, Baltimore; pp. 1090, 1949.

THE Ninth International Congress of Industrial Medicine convened in London in September, 1949, under circumstances of pomp and formality little known to the United States. Their Majesties, the King and Queen, served as patrons, and the entire activities were graced by the presence of lords, ladies and ministers. The international flavor of these sessions is attested by the presence of representatives from 25 participating nations. Out of these sessions has derived this massive volume of authentic scientific material chiefly directed to occupational diseases and the physiology of work.

The greater part of this book is published in English, but here and there French appears although not to a point disturbing to any American reader unfamiliar with that language.

The mere listing of the topics of various sectional meetings, to say nothing of individual contributions, would exceed the space allotted to this review, but a few are mentioned as representative: "Occupational Diseases of the Lungs other than Pneumoconiosis," "The Newer Metals," "Electrical Accidents," "Occupational Tumors of the Bladder," "The Integration of Occupational Health with National and Community Services," "Industrial Dermatology," "Pneumoconiosis," "Berylliosis."

At least 224 distinguished scientists participated in these deliberations. The present list of U.S. members of the International Permanent Commission for Industrial Medicine is made up of the following: DRS. GEORGE H. GEHRMAN, LEONARD GREENBURG, ALICE HAMILTON, H. H. KESSLER, ANTHONY J. LANZA, ROBERT T. LEGGE, CAREY P. McCORD, R. R. SAYERS, CLARENCE D. SELBY, JAMES G. TOWNSEND.

It may not be urged upon all industrial physicians of this country that this book is a "must" for their desk. No less, any physician would profit from its ownership. By all means, every industrial physician should have access to this massive publication, and every reading will extend knowledge of the world's status in terms of occupational health.

The Heart and Lungs

PHYSIOLOGY IN DISEASES OF THE HEART AND LUNGS, M. D. ALTSCHULE, Harvard University Press, 1949, pp. 368, $5.00.

THIS author, in naiveté or perhaps astuteness, has provided a new reason for writing a book .... some Harvard medical students asked him to. This may be reason enough since the impelling traits of Harvard students long have been established. Otherwise and if retroactivity might be exercised, a further reason why this book might have been written is as a service to industrial physicians in their groping for a better grasp on their enlarging functions in medically serving the factory worker. Among those industrial physicians who indulge in *ex cathedra* pronouncements, it has become apparent that if the industrial physician is to fulfill his best opportunities, he must move into newly staked out territory in industry, presently little occupied by anyone.

What are these new territories? Two only will be mentioned. Foremost is the need to explore the functional disorders of the worker's mind. Why his behaviour? What motivates his actions? Since in no wise does this book treat of any such, quickly this will be laid aside to point to the immediately more appropriate example—the approach to the worker's ills in terms of impaired physiologic functions. With unnecessary modesty the author is fairly sure his book has no practical value. Possibly there exists just a little yearning that practicality never may appear. He writes: "The fact that there is little of practical everyday usefulness here is inherent in the nature of this work." Without the author's sanction and maybe over his protestations, this book is declared to be an "opus practicatus."

This book is little concerned with diagnosis, disability or drugs. It is addressed to the affronts to normal functions imposed by disease. This is a charting of the physiologic cost of work, pulmonary elasticity, respiratory dynamics, edema, the metabolism of sodium chloride, cyanosis, dyspnea, orthopnea, tachycardia, pulmonary fibrosis, asthma, emphysema .... this is but a taste.

In the intermittency that attended this review, this monograph lay at the left of the reviewer's desk. In the middle lay a pile of chest x-ray films. At the right sat a gasping patient. The patient's respiratory rate of 51 per minute was eloquent of

acute illness. The x-rays, with a background of exposure history, shouted "berylliosis." The book equally silently cried out the list of physiologic insults.

Not just one physician, but the multitude, needs just what this book provides.

Neurological Diagnosis

PRACTICAL NEUROLOGICAL DIAGNOSIS, R. GLEN SPURLING, M.D., Charles C. Thomas, Springfield, Fourth Edition, 1950, pp. 268, $5.00.

ANY scientific publication that has reached its fourth edition is an adult among books and can stand on its own two covers. This new edition of DR. SPURLING'S "Practical Neurological Diagnosis" may not thus be taken for granted, good as it is, since the subject matter has been altered, rewritten and supplemented. Few industrial physicians escape the necessity for the conduction of neurological examinations. Few such physicians are truly qualified to carry out such examinations without recourse to textbook guidance. Many texts are confusing to these physicians and, at times, the texts themselves are confused. The language of this technical writer is superb in its quality of simplicity. It may well serve as an example of technical English well shaped to the needs of physicians who are not neurologists. This book, in fidelity, may serve to guide the industrial physician to better diagnosis. The author himself states that the present edition is "without departure from the original objective, 'to present a simple account of the principles of neurological diagnosis.'" This author has achieved his objective.

Psychology

THE PSYCHOLOGIST IN INDUSTRY, by M. E. STEINER, Research Psychologist, Personnel Division, General Electric Company, Bridgeport, Connecticut. Charles C. Thomas, Springfield, Illinois, 1949, pp. 107, $2.00.

THE preface of this small, leather-bound monograph indicates that its scope includes a description of techniques utilized in evaluating the worker's mental and emotional equipment, a consideration of selected topics reflecting the worker's attitude toward his job, his working environment, his employer and his associates, with limited data derived from industrial problem cases. The stated purpose is that it has been designed especially for employers, supervisors and counsellors in industry who wish to become better acquainted with the work of the industrial psychologist. These objectives are well developed through the many subdivisions, in well documented form.

This publication if received by high industrial management, with few exceptions, promptly would be referred to its Medical Department for appraisal. At once some suspicions may arise in the mind of the Medical Director that the non-medical industrial psychologist through design seeks to establish himself apart from medical endeavor instead of aligning himself with the Medical Department where undeniably he is needed and, in turn, the psychologist needs the Medical Department. Throughout the pages many statements of medical import appear, such as "psychoneurosis, hysteria, negligence of ailments, dementia praecox, manic-depressive psychosis, epileptic personality," etc. Such language at once reflects the inescapable kinship between psychology and medicine.

At the present time, although little recognized, the outstanding unexplored domain in occupational medicine is mental hygiene. Feeble is the industrial physician's grasp on this situation, but that grasp is growing stronger and needs to be mighty. A handicap will arise if, through the desire of the industrial psychologist for professional independence, support for him by the Medical Department may be withheld. The industrial psychologist is invited to join the total team for occupational health pursuits in order that his influence may not be restricted, but, instead, may reach into every aspect of the worker's physical and mental well-being. It is possible to ponder the possibility that the psychologist may be employing poor psychology in his approach to industry.

Detoxification

DETOXICATION MECHANISMS, by R. TECWYN WILLIAMS, Senior Lecturer in Biochemistry, University of Liverpool, Second Printing, John Wiley & Sons, Inc., pp. 288, 1949.

THE title of this small book might mislead some readers. The term "detoxication" could imply the removal of toxic properties. The author, early in his publication, painstakingly indicates that such is not the case, and that instead his data are directed to the metabolism of those compounds that may enter the body as therapeutic agents or in the case of industrial exposures or from accidental intake of such compounds.

As a result of incomplete thinking, most physicians are prone to believe that all of the evil consequences of chemical compounds entering the body derive from that compound. Throughout many pages the author makes it clear that not always is this true. While he traces the metabolism of several hundreds of compounds, a single one will serve to reflect the import of all. For this purpose, methyl alcohol is selected. The narcotic action of methyl alcohol is attributable to that substance in unchanged form. Unlike ethyl alcohol, its methyl counterpart is metabolized some five times slower. Apart from narcotic action, the toxic properties of methyl alcohol spring from its metabolites. The immediate metabolites are formaldehyde and formic acid, both of which are much more toxic than the parent substance. These metabolites are believed to be the damaging agents that effect blindness or impaired vision. In brief, methyl alcohol itself, conceivably is not more dangerous than some other primary alcohols but the products of its chemical decomposition are strikingly harmful. It then follows that industrial toxicologists should be well alerted to prospective damage from formaldehyde and formic acid as those substances may be employed or generated apart from methyl alcohol exposure.

In similar fashion, the author portrays what happens within the body following the intake of a legion of other substances in terms of oxidation, reductions and conjugation processes.

Eventually conviction arises, both that some harmless substances decompose into highly poisonous agents after entry into the body but otherwise many harmful substances lose all or a portion of their toxic action through metabolic processes. The author recognizes that only to a limited extent does the animal body possess chemical defense mechanisms and that more often the animal body is without devices serving as safeguards.

This highly technical publication is indispensable for the physician serving as an industrial toxicologist and for those industrial hygienists whose activities lie in the field of physiologic action.

Toxicology

THE CHEMISTRY OF INDUSTRIAL TOXICOLOGY, by HERVEY B. ELKINS, PH.D., John Wiley & Sons, Inc., New York, 1950, pp. 406, $5.50.

ONE of James Stephens' whimsical philosophers was caused to say "You can't have too much of a good thing." This concept possibly has been challenged in the merciless killings of little pigs, in the aromatic burning of some thousands of tons of coffee and in the selling of potatoes at one cent per bushel. But no challenge has been extended to the recent small flood of publications on industrial hygiene and industrial toxicology. With unerring acumen, all of these new publications have been channeled to fill a need. This book is no exception. This excellent publication by the Chief of the Laboratory, Division of Occupational Hygiene, Massachusetts Department of Labor and Industries, is specifically directed to the chemical aspects of industrial toxicology as seen through the eyes of the chemist or engineer. The contents are addressed to the harmful substances themselves, the industrial processes in which they find use and their measurement, rather than to the symptomology and pathology of their action on human beings or their clinical management. The early portion of this book is devoted to such fundamentals as the avenues of absorption, the elements of respiration and circulation, the rates of absorption, the elimination of harmful substances, the general nature of damage whether through asphyxiation, irritation, narcosis, blood changes, cancers, etc. Swiftly thereafter the author moves into long and short but always appropriate chemical and physical consideration with a minimum of the medical. All in good time the author provides consideration for maximum allowable concentrations, unsolved problems, sampling devices and analytical methods. A judicious selection of bibliographic items completes the text. This book is the product of an industrial hygienist's industrial hygienist.

Origins

THE ORIGIN OF MEDICAL TERMS, by HENRY ALAN SKINNER, Professor of Anatomy, University of Western Ontario, The Williams and Wilkins Company, pp. 379, 1949.

THE practice of medicine is its own stern taskmaker. Among physicians, the few who are semanticists at heart find little time to explore such pleasant by-paths as the story of words or the history of languages. That deficiency may be condoned except for the origin of medical terms in daily use. All this has been made easy by Dr. Skinner who has compiled in alphabetic fashion the origin of many hundreds of medical words. The majority drably derive with little change from the original Greek or Latin. Thus "suture" is not other than the Latin "sutura,"—a sewing. A smaller number bring out astonishing implications or meanings wholly dissimilar to common belief. "Pink eye," that well known conjunctivitis attributed to the Koch-Weeks bacillus, has nothing to do with the color "pink." In Elizabethan English "pink" meant to scratch or prick or pierce. Too, in that period it designated "half-shut" eyes as said of plumpy Bacchus by Shakespeare in Anthony and Cleopatra. "Pink eye" is more closely identifiable with the laundress' pinking iron than with a garden of pink roses. Another eye opener may be found in the origin of "fornicate." In Latin, "fornicatus" referred to the arches of buildings. In Rome the public prostitutes were maintained under the arches of designated public buildings. In the slang of bawdy Romans, a visit beneath the arches had an eyebrow-elevating meaning not necessarily in the mind of the writer of a popular song, the title of which is near identical.

Few physicians, however semantic minded, after reading this scientific book will fail to have added something to their total of medical language lore.

The Patient

THE SOCIOLOGY OF THE PATIENT, by EARL LOMON KOOS, PH.D., Professor and Chairman of the Department of Sociology, The University of Rochester. New York, McGraw-Hill Book Company, Inc., 1950. 264 pp., $3.00.

THE concept that a patient is a person with certain social and psychological relationships serving as determinants of the progress he is making with his illness is one yet to be adopted by most practitioners. Consideration of the ill or injured employee as a being other than merely a badge number or "an appendix" or "a Colles's" is mandatory in the proper evaluation, treatment and placement of that person. These implications have been presented in this text for nurses, but even though short and not too detailed, the bases for the human relationships of medicine—"scientific friendship" as termed by the book's editor—are given for understandable and enjoyable reading.

Taking the reader into the social laboratory, the author discusses "The Individual Patient," "The Patient and His Groups," and "The Patient's Activities and His Problems." Fundamental definitions of sociological terms are offered, and the needs of the individual are discussed. The position and relationship of the maladjusted employee-patient in his family are of importance for a comprehension of the factors causing the maladjusted behavior. To become a mature person these skills and attitudes unconsciously must be developed: (1) adequate skills for either the beginning job or for entrance to college or professional schools, (2) realistic attitudes towards members of the opposite sex, (3) emotional independence of his parents, (4) increased responsibility to his society, and (5) preparation for marriage and a family of his own. Besides an understanding of maturity factors, information must be had by the physician in industry of intra-group conflicts, classes, castes, and the national segments of the plant population particularly if he is engaged in an industry employing members of different ethnic and nationalist backgrounds.

The patient and his physical and mental health are presented, and some of the thinking relative to causative factors of mental ill health are entered into: ".... Certainly the complexity of the society in which we live needs to be considered. We are constantly placed under social restraints and constantly required to modify our 'natural' behavior to meet the demands of our culture and group life."

INDUSTRIAL MEDICINE AND SURGERY

EXECUTIVE, EDITORIAL, AND PUBLICATION OFFICES: 605 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

Consultant Editor:
CAREY P. McCORD, M.D.

Editor:
JEAN SPENCER FELTON, M.D.

Associate Editors:

HENRY S. BROWN, M.D. • JAMES T. CASE, M.D., F.A.C.S. • LYDIA G. GIBERSON, M.D. • IRVING GRAY, M.D., F.A.C.P.
CHESTER C. GUY, M.D., F.A.C.S. • EMERY R. HAYHURST, M.D. • EDWARD C. HOLMBLAD, M.D., F.A.C.S.
RUTHERFORD T. JOHNSTONE, M.D. • WILLIAM F. LAUTEN, M.D. • ROBERT T. LEGGE, M.D., F.A.C.S. • CHRISTOPHER LEGGO, M.D.
OSCAR L. LEVIN, M.D. • WM. D. McNALLY, M.D. • ARTHUR R. METZ, M.D., F.A.C.S. • M. N. NEWQUIST, M.D.
CARL T. OLSON, M.D. • OSCAR A. SANDER, M.D. • FREDERICK W. SLOBE, M.D., F.A.C.S. • JAMES K. STACK, M.D., F.A.C.S.

ESTABLISHED 1932

Publisher: A. D. CLOUD

Volume 19 MAY 1950 *Number 5*

A Pioneer in Medical Photography —Eadweard Muybridge— 1830—1904

SO COMMONPLACE is good photography in medical journals that neither the reader nor the publisher is likely to make any low obeisance in the presence of superb illustrations. Fifty years after his retirement in 1900, Eadweard Muybridge now commands acclaim everywhere and even more than accorded during his active years. This British-born American, near his twenty-first birthday, migrated to the United States leaving behind the less euphonious version of his name Mugeridge. He was captivated by the then new art of photography and found the sunshine of the Pacific Coast best suited to the photographer's needs just as today the motion picture industry finds California's sunshine to its advantage. Soon thereafter, the artistry of young Muybridge was recognized by the Federal government and his skill led to a commission for a photographic exploration of the fringes of Alaska.

Perhaps only by accident did this commercial photographer find his way to photographic biologic enterprise. In the year 1872, an historic personal controversy arose over the gait of horses. Governor Leland Stanford claimed that in certain gaits at full speed, all four feet of the horse cleared the ground. There was a dissenting group and its leader became Frederick MacCrellish who abetted those disputants who claimed that at least one foot touched the ground on all occasions. A bet of $25,000 was provided and Muybridge was employed to furnish photographic evidence—the first occasion that the camera was applied as a research instrument.

This inaugurated a career in animal locomotion that ever afterwards was the mainspring of Muybridge's endeavors. It was but natural that, in time, man as an animal in motion, would become the object of Muybridge's graphic inquiry. Not only were the normal movements of man photographed, but man with his diseases, the infant man, the aged man, the man at work. One of the choice pieces of Muybridge collections is that of the hod-carrier posing naked at his duties. No longer does the modern carrier climb six floors of ladders with a hod on his shoulders. Whatever be the multiplicity of reasons that led to hoisting elevators for all building materials, at least one factor springs from Muybridge's portrayal of the anatomic insults imposed by this arduous occupation in earlier industry. A thousand other occupations might have been the object of Muybridge's ingenuity and many were.

A score of work years dedicated to the motion of animals, the motion of athletes, the motion of tradesmen at their work culminated in Chicago's Columbian Exposition in 1893 where Muybridge's "Zoopraxographical Hall" was a stellar attraction. Muybridge was the first intensive photographer for the medical sciences. Perhaps unwittingly, his work and its results contributed greatly to our present understanding of industrial medicine by showing, in anatomical pose and detail, just how the worker moves in going about his work.

This journal, a publisher of fine medical photographs, pays its respectful tribute to this pioneer of photographic records for the perpetuation of learning in the medical sciences.

A Wealth of Material

STATISTICS properly applied become a dramatic tool. With occupational medicine never in mind, departments of the Federal government year by year publish data of nation-wide coverage with concealed but usable value in the charting of the course of industry's medicine. Appreciatively, RUSSELL L. ROBERTSON (page 243) has assembled from several of the latest governmental publications some striking excerpts serving chiefly as a guidepost to the voluminous full documents, which are scores in number. His

tables, slightly modified for his presentation here, have been selected to provide just the flavor that a wealth of material lies before every industrial medicine author who may find himself concerned with the number of large plants, the number of small plants, the industries which by their very nature must be small, and, conversely, those which naturally can be operated only in large units. This little glimpse is a miniature of a much larger portrayal of the physical dominion of all of industrial medicine in the United States. In spite of the author's finding that "98.29% of all of the nation's 2,674,931 places of business have work forces of less than 100 employees," the remaining 1.71% includes *45,741 business places which employ nearly half of the nation's entire work force.*

The Present Status

SEVERAL doctors with experience as physicians in industry recently "took time out" while attending meetings in a metropolitan industrial area to visit the medical departments of 18 large industries. It was the purpose of these visits to evaluate critically the medical services being provided workers in the area. In order that some basis could be established for comparison of the different services, specific questions were to be answered by each observer. While the answers obtained to some of the questions do not permit analysis, a number of interesting observations were made which are considered worthy of note.

All programs included pre-placement or "pre-employment" examinations. Strangely enough, these examinations were performed by a male nurse in one plant. Subsequent periodic and diagnostic examinations were provided for all employees by only two of the group. More frequently such examinations were performed on only the top executive group of workers known to be engaged in hazardous occupations. In one instance the executive group was examined by private practitioners at company expense. None of the findings was available to the company's medical officer. Such examinations were usually performed by the doctor employed by the company. Thus the "top 60 men" of one corporation were private patients of the medical director. The next 500 employees could have an examination by one of the company physicians without charge. Diagnostic consultations at company expense were available to the physician in industry in only five plants. In one of these, the consultant's fee was paid by the company only when the disease was proved to be associated with the worker's job assignment.

Ambulatory patients suffering from occupational illness or industrial injuries were treated in most company dispensaries. Provisions for hospitalization of the non-ambulatory worker in these categories were usually made. Treatment of non-disabling illnesses was provided by two departments, while a third offered "a good deal of advice" on non-occupational illnesses to both employees and their families.

In only three instances did the medical officers have hospital appointments which permitted their taking complete charge of the victims of industrial accidents. In most instances it was necessary to refer all such hospital cases to private consultants, especially when surgical therapy was indicated.

There was also a surprising lack of uniformity with regard to the position of the medical director in the administrative set-up. In only two instances did he report directly to top management (vice-presidents), while in 11 instances he reported to personnel or industrial relations officers. In three instances the medical officer was responsible to local plant managers or superintendents.

A complete industrial hygiene program was maintained in only one plant. Routine periodic surveys were made in another, while two or three others made such surveys or studies "when the need arose." In 10 plants there was no industrial hygiene program. In the case of the one complete program, the industrial hygiene department was autonomous. Such services as were provided in the other plants were under the direction of the medical department.

These observations are of great interest when considered in the light of the over-all medico-labor relations programs confronting American business today. An adequate medical program benefits industry and worker alike. An inadequate program permits health matters to become a pawn in union-management bargaining conferences where too frequently emotions plus the lack of expert medical guidance may lead to impractical, costly programs of little or no value to worker or management. —R. C. PAGE, M.D.

Patient under Treatment

FOR CHRONIC URINARY TRACT INFECTION

ENJOYS

Gratifying Relief

from distressing symptoms

The action of orally administered Pyridium often enables patients to carry on without interruption of normal pursuits throughout the course of specific treatment of uncomplicated prostatitis, cystitis, urethritis, and pyelonephritis.

This effective urinary analgesic relieves distressing symptoms such as urinary frequency and pain and burning on urination, without systemic sedation or narcotic action.

Pyridium is the trade-mark of Nepera Chemical Co., Inc., successor to Pyridium Corporation, for its brand of phenylazo - diamino - pyridine HCl. Merck & Co., Inc. sole distributor in the United States.

The complete story of Pyridium and its clinical uses is available upon request.

Pyridium®

(Brand of phenylazo-diamino-pyridine HCl)

MERCK & CO., INC. *Manufacturing Chemists* RAHWAY, NEW JERSEY

In Canada: Merck & Co. Limited—Montreal, Que.

A CURRENT story about Britain's national health scheme has one woman in physician's waiting room asking another, "My dear, why weren't you here yesterday? Were you sick?"

—*Boston Globe.*

In India

THE data relating to the incidence of sickness in India are extremely scanty. The *Indian Labour Gazette* publishes every month figures relating to absenteeism for certain industries. The percentage of absenteeism due to sickness and accident is available only for a few industries: cotton mills in the Madras Province, iron and steel, cement, match and ordnance factories for all provinces. The percentages of absenteeism may be roughly taken at 10, sickness and accident accounting for 3%. According to the data collected by Prof. B. P. Adarkar in connection with his report on Health Insurance for Industrial Workers, the maximum rate of sickness is 14.6 days per year per worker.

—From "Industrial Medicine—Its Economic Aspect," by DR. H. P. DASTUR, in *Proceedings of the Society for the Study of Industrial Medicine*, Jamshedpur, March, 1950.

The Way We Do It

IF WE were Lilliputians and a Gulliver should look down on us with a magnifying glass he would see the shiftless and improvident peopling the earth while toiling millions strive to keep them in comfort and idleness. But at present there is nothing that can be done to rectify the evil. Our present conception of the sanctity of human life and our proper repugnance to artificial means of prevention of conception forbid the use of any measures as yet known to breed the race up to a higher level. Sloth, insanity, and venereal disease will continue to levy their toll for many ages to come, and the intelligent and industrious will continue to pay the cost.

—From "Breeding of the Unfit," in *Urologic & Cutaneous Review*, March, 1950.

Industry's Old-Age Problem

COMPLEX, and inescapable: Speaking before the AMA Conference on Industrial Health, DR. EDWARD STIEGLITZ, outstanding authority on the problems of old age, estimates that 40% of our population will be over 45 years of age by 1980. Industry will have to employ them—or support them. Even now, unions are raising a cry against compulsory retirement. Our present knowledge of the aging process is pitifully inadequate. We know that it's possible to have old eyes and young hands as well as old ideas and a young heart. But we don't know why this is so—or how to take advantage of the still-youthful abilities of an older person. STIEGLITZ points out that job evaluation does fit the man to the job—when he starts, but rarely are jobs re-evaluated later on

IN LOCAL ANTIBIOTIC THERAPY

Virtually eliminates the threat of hypersensitivity

BACITRACIN OINTMENT

CSC

THE one serious drawback to local antibiotic therapy—the tendency to development of local allergic reactions—is largely overcome when Bacitracin Ointment-C.S.C. is employed. The low index of allergenicity of this antibiotic is one of its outstanding features, and has been emphasized in a recent publication.*

Bacitracin Ointment-C.S.C. contains 500 units of bacitracin per gram. It has produced excellent results in the treatment of ecthyma, infectious eczematoid dermatitis, folliculitis, sycosis vulgaris, and pyoderma gangrenosum. In decubitus ulcer it not only controls the infection promptly but also encourages more rapid healing. Impetigo contagiosa responds particularly well, many cases completely clearing up within 48 hours of the initiation of therapy.

Bacitracin Ointment-C.S.C. contains 500 units of bacitracin per gram in a petrolatum base. Available in ½ and 1 ounce tubes.

*Derzavis, J. L.; Rice, J. S., and Leland, L. S.: Topical Bacitracin Therapy of Pyogenic Dermatoses; a Clinical Report, J.A.M.A. *141*:191 (Sept. 17) 1949.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, N. Y.

to fit them to the man as he changes. Particularly important is the effect of mental health on physical well-being. Consider such points as these: "What will be the effect of a '25-year celebration' on the men involved? Will it be a real celebration, or just a damaging reminder of lack of progress over a long period of time?" The old-age problem is here, it's serious, and pensions alone won't solve it.

—*Modern Industry*, March 15, 1950.

The Worst Crime

UNION leaders would benefit themselves and their followers greatly if they held the belief of their first great leader, Samuel Gompers. He maintained that the worst crime an employer could commit against his workers was to fail to make a profit.

—*The Curtis Courier*, Mar., 1950.

Air Pollution

THE first United States Technical Conference on Air Pollution will be held in Washington, D.C., on May 3, 4, and 5, 1950. Various phases of air pollution, including meteorology, health, instrumentation, analytical methods and properties, equipment, agriculture, and legislation, will be discussed.

Michigan Course

UNIVERSITY of Michigan, School of Public Health, 109 South Observatory St., Ann Arbor, is offering an in-service training course in industrial hygiene and human relations, June 19-21. The program includes discussions on the problem of human relationships in plant safety practices, sanitation, plant layout, plant skin hazards, and industrial health problems. Applications should be addressed to H. E. MILLER, School of Public Health.

Georgia Course

GEORGIA Institute of Technology, in cooperation with the U.S. Public Health Service and the Georgia Department of Public Health, has been offering an intensive one-quarter course at graduate level during the summer. This has been offered to students, mostly engineers, on stipends from State Boards of Health. Georgia Tech and the health agencies are again offering the course during the coming summer quarter. The material is designed to provide a comprehensive background for men with collateral scientific or engineering training who are interested in industrial hygiene, and the instruction combines theoretical and practical considerations in such a manner that its completion by qualified men will materially assist in equipping them to engage in professional industrial hygiene practice. Enrollment will be limited to 20 men for the 1950 session. The couse is to coincide with the regular summer quarter of 12 weeks, June 26 through September 9, 1950.

Sporicidal Too!
BARD-PARKER
FORMALDEHYDE GERMICIDE
Recognized authorities on surgical sterilization state emphatically that no disinfecting medium should be used in the operating room that is not capable of killing spores.
Compare this significant data evaluating the potency of the IMPROVED germicide
Sporulating Bacteria | 50% Dried Blood | Without Blood
Cl. tetani | 3 hours | 3 hours
Cl. welchii | 2 hours | 2 hours
B. anthracis | 1½ hours | 1½ hours
Vegetative Bacteria | |
Staph. aureus | 5 min. | 15 sec.
E. coli | 3 min. | 15 sec.
Strept. hemolyticus | 2 min. | 15 sec.
A new brochure evaluating the comparative properties of B-P Germicide will be mailed on request.
Within a reasonably short period, practical for hospital purposes, this potent Solution destroys pathogenic vegetative bacteria, spore-formers and their spores.
True surgical disinfection is further accomplished without danger of rust or corrosive damage to sharp edged and other delicate surgical instruments, thus leaving their efficiency and life expectancy unimpaired.
In meeting ALL THREE exacting requirements of potency, practicability and protection, B-P Germicide provides a desirable margin of safety for instrument disinfection.
Ask your dealer
PARKER, WHITE & HEYL, INC.
Danbury, Connecticut
A BARD-PARKER PRODUCT

Psychiatric Clinics

THERE were 485 known psychiatric outpatient clinics operating in the United States and territories in 1947, these maintaining, on a permanent or intermittent basis, 1142 outlets of service. Clinics and outlets were heavily concentrated in the New England, Middle Atlantic and

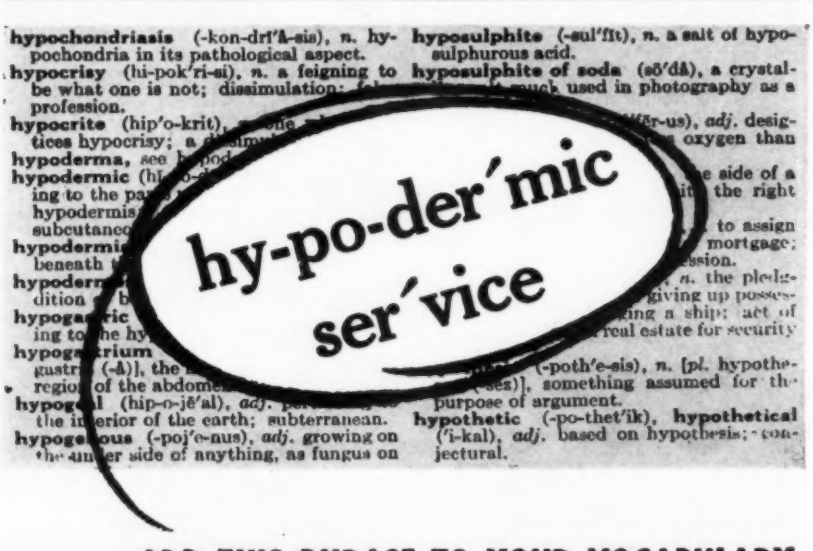
East North Central states, and scattered thinly throughout the rest of the country, with a smaller concentration in California. In Idaho, Wyoming, Nevada, Utah and South Dakota, there were no psychiatric clinics operating at all, and other states had only one each. Alaska and the Virgin Islands were also without them, while Hawaii and Puerto Rico had two each. At the other extreme, New York was served by 95 psychiatric clinics, while Illinois, Michigan, Ohio, Pennsylvania, New Jersey, Massachusetts and California had more than 20 each. Of the 1142 outlets of service, 221 were stationary full-time clinics, 182 were stationary part-time, and 739 were maintained by 82 traveling clinics.

International Conference

THE recent international conference of experts in the field of pneumoconiosis—lung diseases caused by dust—concluded at Sydney, Australia, with the adoption of a report recommending a three-pronged attack on the problem—through modern methods of dust suppression, by legislation providing compensation for disabled workers, and by measures to rehabilitate the diseases' victims. The experts proposed that the technical papers which had been prepared for the meeting, and the record of its proceedings, be widely circulated with a view to assisting governments in the drafting of legislation to combat dust diseases. The conference approved an international definition of pneumoconiosis, and a plan for the international classification of x-rays of lungs affected by dust disease.

Tuberculosis

THE annual death rate from tuberculosis dropped 10% in 1948 to 30 per 100,000 population, according to "Tuberculosis Mortality in the U.S. 1948," in the current Tuberculosis Control Issue of *Public Health Reports*, of the Public Health Service. The decline in the tuberculosis mortality rate has accelerated during the post-war years, dropping 5% from 1945 to 1946, and 7% from 1945 to 1947. The tuberculosis death rate for the population as a whole has been steadily declining for the past 20 years, so that the 1948 rate was less than half the 1930 rate. The decline is sharper in some sections of the population than in others—sharpest of all in children under 15 years. In persons over 65 years, on the other hand, the decline has been slow, and indeed in white males over 65 the tuberculosis death rate was higher in 1948 than in 1941. In general, the tuberculosis death rates for women have fallen more rapidly than those for men. The 1948 rate for females was about half of that for males. Mortality rates from this disease continue to be more than three times as high for the nonwhite groups as for the white. The state with the lowest tuberculosis death rate in 1948 was Iowa with a rate of 9.5 per 100,000 population. The state with the highest rate, Arizona, dropped from 100 in 1947 to 82.4 in 1948.



ADD THIS PHRASE TO YOUR VOCABULARY

. . . and use it as a measure of your hypodermic syringe costs.

You don't use a syringe once and then throw it away . . . you use a syringe over and over and expect it to stand up under constant use, repeated sterilization, and ordinary handling. Obviously, your cost is not merely the initial price of the syringe but is measured by the length of time that syringe gives satisfactory service without need of replacement. You don't buy a hypodermic *syringe*, you buy hypodermic *service!*

To find out what it is costing *you* for *Hypodermic Service*, send for a free supply of B-D HYPODERMIC SERVICE ACCOUNT RECORD forms and check your purchases for a month, a quarter, or a year. Address your request to Dept. 18-E

For best results always use a B-D Needle with a B-D Syringe.

BECTON, DICKINSON AND COMPANY, RUTHERFORD, N. J.

'Knock on Wood!"

SOMETHING good — nobody seems to know for sure what—has happened to the health of Cleveland's industrial workers. A survey reported by the Cleveland city division of health shows absenteeism due to illness is at "a remarkable low." DR. THEODORE T. DUNCAN, chief of the subdivision of communicable diseases, made a spot check of seven industrial plants employing a total of more than 27,000 workers, as is his custom at this time of the year. The results pleased him. The doctor in charge of the medical department at one plant employing 2,000 persons reported, for example: "This is the best winter we've had in a long time. There has been little absenteeism due to illness. There has been the usual run of minor colds but very few of the influenza type." He added he had not "seen the severe type of cold this year." A nurse at a plant employing 7,000 reported "a few with upper respiratory symptoms" but added that "they are not very ill and do not have to be absent from work." At none of the plants checked were there any indications of any considerable absenteeism from influenza often quite common at this season. DR. DUNCAN did not attempt to explain the reasons for the good health report. However, obvious possible explanations might include (1) the tightening up of the employment situation and consequent unwillingness of workers to be absent for slight illness, (2) gradual weeding out of "casual" workers since the war's end, (3) the light winter and (4) new drugs and treatments including the controversial antihistamines.

—*Cleveland Plain Dealer*, February 18, 1950.

why let healing drag on and on and on . . .
in BURNS
slow healing WOUNDS
ULCERS
(decubitus, varicose, diabetic)
renew vitality of sluggish cells
stimulate healthy granulation
accelerate smooth epithelization[1] with
Desitin®
OINTMENT
the external cod liver oil therapy
PROTECTIVE • SOOTHING • HEALING
℞ Desitin Ointment is a stable blend of crude cod liver oil (with unsaturated fatty acids and vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Minimizes scarring; dressings easily applied and painlessly removed. Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.
Send for SAMPLES and new clinical reprint
1. Behrman, H. T., Combes, F. C., Bonnell, A., and Leviticus, R.: Industrial Med. & Surg. 18:513, 1949.
Desitin CHEMICAL COMPANY
70 Ship Street, Providence, R. I.

Health Symposium

CHEMICAL advances in industrial health and safety, the chemical constitution of bone, improved scientific tools for studying the structure of molecules, and developments in several other chemical fields were reported at sessions of 13 scientific and technical divisions of the American Chemical Society in Detroit last month. New chemical means for the reduction of industrial air pollution, purification and softening of water, and the grading and testing of natural rubber were among the many subjects discussed. A symposium on "Industrial Health and Safety," sponsored by the Society's Division of Industrial and Engineering Chemistry, was held on Tuesday, April 18, with JOHN F. MCMAHON of Mellon Institute, Pittsburgh, presiding. Advances in industrial hygiene were discussed by DR. W. P. YANT, Mine Safety Appliances Company, Pittsburgh; DR. D. D. IRISH, of the Dow Chemical Company, Midland, Michigan, talked on the safe use of chemical products; DR. H. H. SCHRENK, of Industrial Hygiene Foundation, Pittsburgh, outlined the problems of air pollution; W. R. BRADLEY described plant location and design; H. H. FAWCETT spoke on laboratory safety; DR. JAMES H. STERNER explained the medical aspects of industrial hygiene; and WARREN A. COOK discussed the engineering phases of plant health control.

Where the Money Goes

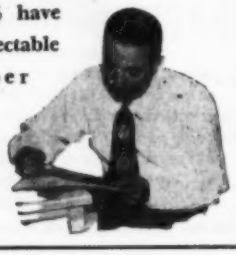
THE Associated Press took a look at the $500 million in pay raises voted by Congress and made a few rapid-fire calculations about the costs of Big Government: The Federal payroll (including the armed services) is now over $10 billion a year. Six of every 100 workers are directly in the pay of the U.S. Government. The government payroll alone costs each Federal income taxpayer $227 a year.

Getting to Sleep

DR. PAUL H. FLUCK, of Lambertville, New Jersey, in the April issue of *Today's Health*, magazine for the public published by the American Medical Association, advises the following "ten commandments for good sleeping": (1) Go to bed at the same hour every night. (2) Try to get at least one hour of sleep before midnight. (3) Drink no more than a glass of milk or eat no more than a small bowl of cereal before retiring. (4) Never eat or drink ice cold foods before retiring. Ice cream is the worst kind of midnight snack. (5) Never listen to the radio in bed. (6) Never, positively never, read in bed. (7) Provide a regular schedule for the hobby, dog or wife or husband who interferes with your rest. (8) When you go to bed, close your eyes and go to sleep. (9) If that doesn't happen, try to remember what position you awake in the next morning. Then take that position when you go to bed at night. (10) Relax every nerve, muscle and thought. Patience won't kill you; sleeping pills may.

Writes Dr. Carl Maggio: "With our Keystone OVS service we have conducted over 20,000 employee screening tests since 1946, with excellent results in all four requisites of our visual program: (1) Establishment of visual standards for each occupation. (2) Screening new applicants and classifying according to visual skills. (3) Visual classification of employees for transfer and promotion. (4) Recommendation for eye examination where needed.

"There is little reason for condoning visual defects in industry—at least 90% have proven correctable with proper care."



Periodic Vision Testing Increases Production . . . Reduces Spoilage . . . Lowers Accident Rates . . . Improves Employee Morale by reducing fatigue, irritability, absenteeism.

IN YOUR OWN PLANT, we will run sampling tests and make a visual analysis of job operations, with no obligation whatever. KEYSTONE VIEW CO., Meadville, Pa., ***originators of binocular vision testing in industry.***

2500 Industrial Companies Use KEYSTONE Occupational Visual Tests

Yale Alcohol Studies

YALE Summer School of Alcohol Studies will hold its eighth annual session at Yale University, New Haven, July 8 to August 4. A new emphasis will be placed on the particular problems of alcoholism in industry. The Yale program is now in operation in Wisconsin, with the cooperation of the Wisconsin Bureau of Alcoholic Studies. Before the summer session begins, two further studies will have been completed: (1) the occupational status and history of more than 2,000 patients of alcohol clinics, and (2) the problems encountered by union stewards. Registration for the summer session will take place July 8-9. ELVIN M. JELLINEK, SC.D., Research Associate in Applied Physiology at Yale, will direct the school. After two weeks of general background lectures, the student body will be divided into two groups: (1) persons interested in the legal, educational, religious, and community problems involved in alcoholism, and (2) physicians, social workers and others concerned with the care and treatment of alcoholics. The summer program includes 55 lectures, informal

group meetings, visits to the laboratory, clinical and other facilities and individual consultations with staff members. In addition, the schedule will provide about 12 hours each for the student workshop dealing with special interests. All desiring to enroll are required to have a college education or equivalent experience. Part and whole scholarships are awarded annually by the summer school to qualified persons. Correspondence should be addressed to Summer School of Alcohol Studies, Laboratory of Applied Physiology, Yale University, 52 Hillhouse Ave., New Haven.

Natural Causes

A CORONER'S jury ruled yesterday that Mrs. Marjorie Conway Covington, 28, Negro, of Detroit, died January 3, in the Palmer House from natural causes. At first it was suspected that an overdose of one of the new antihistaminic cold drugs, speeded up by whiskey she had consumed, might have been the cause. CORONER A. L. BRODIE read a report from DR. WALTER J. R. CAMP, State Toxicologist, who said he had been unable to recover the active ingredient of the drug in extensive tests on laboratory animals or the dead woman's tissues.

—*Chicago Tribune*, Apr. 7, 1950.

Alcoholic Program

ALLIS-CHALMERS Manufacturing Co.'s alcoholic program, started 13 months ago, has successfully reduced absenteeism and tardiness and saved employees thousands of dollars in wages, a study shows. Seventy-one employee problem-drinkers were studied in a survey started in March, 1949. At that time the firm put its alcoholic program into effect in its Milwaukee plants. The survey shows that more than half of the 71 drinkers have almost given up drinking. The absentee rate for the entire 71 now is below the plant average. The 71 lost $12,500 in wages in 1949, compared with $19,000 in 1947 and $23,000 in 1948. Allis-Chalmers began by hiring a full-time alcoholic counselor—an alcoholic who once was executive secretary of Alcoholics Anonymous for Milwaukee County. Since the AA counselor took over, the absentee rate among the 71 studied dropped from 8 to 3%.

—*Chicago Daily News*, April 14, 1950.

ŌNOX
is used by
71% of the largest
industrial plants in the U. S. A.

Horse sense about ATHLETE'S FOOT

91 skin specialists condemn old-fashioned foot baths as being "illogical and potentially harmful to the skin."

(Archives of Dermatology and Syphilology for April, 1942.)

The best way to prevent Athlete's Foot, say these specialists, is to *stop* trying to disinfect the feet. Concentrate instead on improving the condition of the skin.

✓ *A sound skin is nature's best protection against fungus attack*

That is good horse sense. And it's the basic principle of the Onox skin-toughening method of Athlete's Foot prevention. Instead of disinfecting the feet, Onox mineral salts toughen the shoe-softened skin *and restore its natural resistance to fungus growth.* No fungus growth—no Athlete's Foot.

The above statements are substantiated in tests made by Pease Laboratories, Inc. of New York, and the Department of Bacteriology of a large University. A summary of these tests is available on request.

60-DAY TRIAL OFFER *Try Onox at our risk for 60 days. At the end of that time you must be completely satisfied or you owe us nothing. For full details, write*

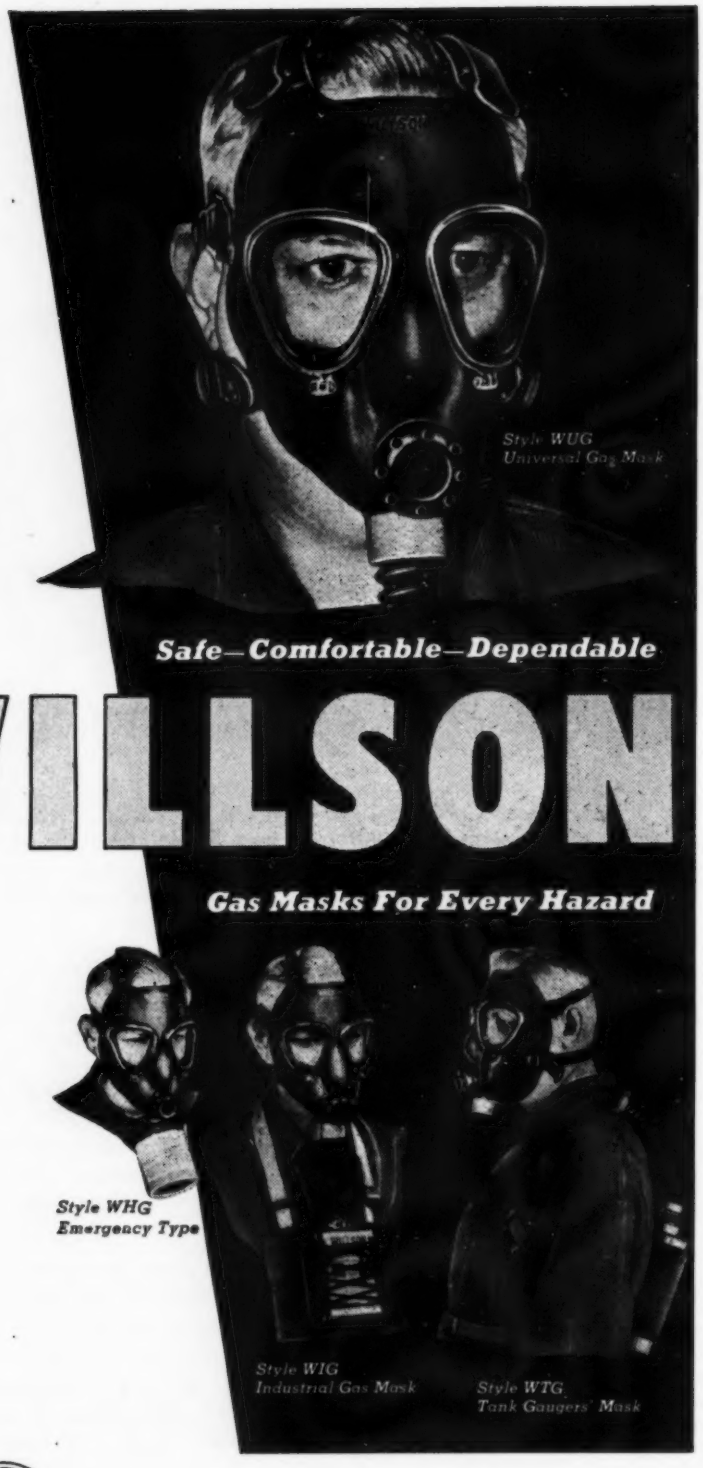
ŌNOX, INC. DEPT. M., 121 SECOND STREET SAN FRANCISCO 5, CALIFORNIA

WAREHOUSES: BROOKLYN, N.Y. · CLEVELAND · NEW ORLEANS · LOS ANGELES

Originators of the skin-toughening method of Athlete's Foot Prevention

The Concept

THE successful occupational health program, whether carried on by the official health agency, the industrial plant, the commercial establishment, or the labor health center, must be a team activity of the professional staff members. The physician, the nurse, the engineer, and the chemist need broad perspectives



WILLSON*
Dependable Products Since 1870
*T.M. Reg. U.S. Pat. Off.

For effective protection against acid gases, organic vapors, carbon monoxide, fumes, mists, smokes and similar hazards, there is a WILLSON Gas Mask approved by the U. S. Bureau of Mines. They have been designed with every consideration for worker safety and comfort. A selector table and complete information on various types is included in our new catalog. Ask our nearest distributor for a copy—or write direct to WILLSON PRODUCTS, INC., 213 Washington Street, Reading, Pa.

of the field in which they are working; an appreciation of the professional problems which must be dealt with by each staff member; an understanding of the complex human and socio-economic problems facing industry, organized labor, and the individual worker; and a realization of the necessity for an integrated approach to accomplish the ultimate objective of protecting and promoting the health of the worker. An understanding of this concept should be acquired, by making it a fundamental premise in the teaching of occupational health. Therefore, the teaching program embraces a joint instructional approach to all aspects of the field except those concerned with techniques specific to the physician, engineer, nurse, or chemist. Emphasis is placed upon orientation of the student in the broad fundamental principles of occupational health rather than upon specialized techniques. The field of occupational health, concerned with numerous phases of public health, also includes the practice of clinical medicine, nursing, engineering, and chemistry. Through its program of study, attention will be given to the increasingly important role which occupational health programs will assume. The provision of medical supervision and public health services for the employed population through the place of employment or through the cooperation of management and labor is a practical and effective way of protecting and promoting the health of a major portion of the population.

—From the Announcement of Yale University's Course of Study in Occupational Health.

A Specialty?

MANY medical school graduates do not understand the social problems of our com-

USE **Desenex®**
Powder and Ointment of
ZINCUNDECATE

In the Treatment and Prophylaxis of Fungous Infections of the Skin, especially
DERMATOMYCOSIS PEDIS (ATHLETE'S FOOT)

ACCEPTED — Council on Pharmacy and Chemistry — American Medical Association

For
Maximum Effectiveness
Minimum Irritation

OINTMENT — Undecylenic Acid 5%
Zinc Undecylenate 20%
Tubes of 1 oz., Jars of 1 lb.
POWDER — Undecylenic Acid 2%
Zinc Undecylenate 20%
Sifter packages of 1½ oz., Containers of 1 lb.

Trial quantities and literature on request. W&T

PD-19

WALLACE & TIERNAN PRODUCTS, INCORPORATED, Belleville 9, New Jersey, U.S.A.

plex modern society and fail to realize the extent of their own community responsibility, according to DR. FRODE JENSEN, director of graduate and post-graduate medical education at the University of Colorado School of Medicine. DR. JENSEN maintained that not every physician interested in industrial medicine should become a specialist. The designation of a specialist in industrial medicine should be limited to the physician who is especially trained, is employed as a full-time physician, interested in research, and is a teacher. To improve our standards of service for industrial physicians, universities, physicians and industry must carry the responsibility. DR. JENSEN defended the following propositions: (1) The essential purpose of specialization in medicine is to serve society responsibly and to the fullest extent in providing the best medical service possible. (2) The primary responsibility for the education and training of medical specialists rests with the universities. (3) Notwithstanding the achievements of the medical profession during the past few decades, we are nevertheless far behind in our application of special medical knowledge and skills to industry. (4) It is neither possible nor desirable to train all physicians interested in industrial medicine to become specialists. (5) If there is a need for specialists in industrial medicine, industry will of necessity be required to encourage this development and give its financial support. He also posed these five questions for industrial management:

DRINK
Coca-Cola
TRADE MARK REG.

You trust
its quality

FOR MAKING
WET DRESSINGS
"BUROW'S SOLUTION N.F."
PRESTO-BORO POWDER IN ENVELOPES OR IN TABLETS
"PRINCIPAL INGREDIENT OF BASIC ALUMINUM ACETATE"
For wet dressings with astringent and antiphlogistic properties in the symptomatic treatment of inflammations, sprains, insect bites. For rapid healing by their antipruritic, decongestive action. Accurate dosage. Antiseptic. Stable.
ACCEPTED BY U. S. ARMY & NAVY
STANDARD PHARMACEUTICAL CO., INC., 1123 Broadway, New York
Manufacturers of NUCARPON ® Compound Charcoal Tablets for Intestinal Dysfunction
VALERIANETS-DISPERT
For BETTER Sedation

First, is your company or industrial doctor sufficiently informed to understand the economic and social ailments which have accompanied our industrialization? Second, is he invited at management level to take part in discussions concerning current extensive social disunity, mass unemployment, and the widespread confusion and frustration which are characteristics of labor at this time? Third, is your company doctor as important to your management as is, for example, the vice-president of production, and do you ask him concerning his ideas about old age and the growing incidence of chronic disease, fair play, steady employment, healthful working conditions and adequate medical care? Fourth, are you looking upon your company doctor as one who treats diseases only; or have you asked him for his advice concerning the prevention of disease, with the establishment of healthful working conditions? Fifth, is your doctor encouraged, indeed, is he required to leave his work at intervals to take postgraduate courses at the expense of the company?

—*Industrial Hygiene Newsletter*, May, 1950.

Occupational Disease

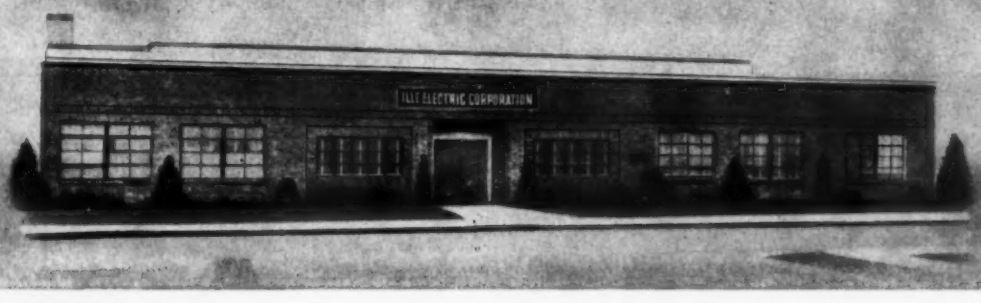
FOR decades the ulcer has been the hallmark of the radio executive. Fred Allen has spun out a dozen ulcer stories involving V.P.'s and advertising agency account executives. The pressure on television biggies is just as heavy as it ever was on radio men, particularly in this phase of video operations, with most stations still in the red. This has brought on a new occupational malady. The symptoms include harassed looks and short tempers. They call this disease TV jeebies!

—LARRY WOLTERS, in *Chicago Sunday Tribune*, April 30, 1950.

1951 Meetings

AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Drake Hotel, Chicago, April 3-5, 1951.

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Haddon Hall, Atlantic City, New Jersey, April 23-27, 1951.



ILLE acquires expanded manufacturing facilities

Ille Electric Corporation—makers of the very finest in Subaqua and other Physical Therapy Equipment—is proud to announce to its many customers and friends, its recent removal from Long Island City to new, larger quarters in Freeport, Long Island. These new quarters, consisting of a modern, well-equipped, one-story brick structure, will permit greatly improved manufacturing and service facilities for Ille's distinguished line of physical therapy apparatus, both portable and stationary—precision-engineered for hospitals, rehabilitation centers, industrial clinics, and physicians' offices.

ILLE ELECTRIC CORPORATION

old address
36-08 Thirty-Third Street
Long Island City, New York

New Address
50 MILL ROAD
FREEPORT, LONG ISLAND, N. Y.

DOCTOR, YOUR OWN NOSE PROVES *IN SECONDS*

PHILIP MORRIS ARE LESS IRRITATING!

YOU KNOW of the published clinical and laboratory studies* which have shown PHILIP MORRIS Cigarettes to be less irritating. BUT NOW—in seconds—YOU CAN MAKE YOUR *OWN* TEST...simple but convincing. Won't you try it?

HERE IS ALL YOU DO:

1 ...light up a PHILIP MORRIS

Take a puff – DON'T INHALE. Just s-l-o-w-l-y let the smoke come through your nose. AND NOW...

2 ...light up your present brand

DON'T INHALE. Just take a puff and s-l-o-w-l-y let the smoke come through your nose. Notice that bite, that sting? Quite a difference from PHILIP MORRIS!

With proof so conclusive, would it not be good practice to suggest PHILIP MORRIS to your patients who smoke?

PHILIP MORRIS

Philip Morris & Co., Ltd., Inc.
100 Park Avenue, New York 17, N. Y.

**Proc. Soc. Exp. Biol. and Med., 1934, 32, 241-245; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592; Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60*

Rx For any elastic bandage need

TENSOR*

ELASTIC BANDAGE

It's woven with

Live Rubber Thread

TENSOR is available in 2, 2½, 3, 4, and 6-inch widths by 5½ yards stretched

Whenever indications suggest the use of pressure-dressing therapy, the many advantages of TENSOR are worthy of note.

Not only does TENSOR have greater stretch than any rubberless bandage, but it *maintains* its therapeutic usefulness upon repeated application—even frequent laundering has no effect upon its elasticity.

It stays in place and doesn't "ride" down when applied on moving-joint areas. TENSOR exerts constant uniform pressure without causing harmful or painful constriction and provides greater mobility and comfort for the patient.

Specify by name: TENSOR
There is no better Elastic Bandage

A product of *Reg. U.S. Pat. Off.

BAUER & BLACK

Division of The Kendall Company, Chicago 16

TENSOR *Elastic* BANDAGE

Advertisers Index

Abbott Laboratories	17	Ille Electric Corporation	34
American Sterilizer Company	20	Johnson & Johnson	12, 13
Ames Company, Inc.	15	Keystone View Company	30
Bard Parker Co., Inc.	27	Lilly, Eli and Company	24
Bauer & Black	21, 36	Merck & Company, Inc.	25
Becton Dickinson & Company	28	New York Pharmaceutical Company	42
Birtcher Corporation	38	Onox, Inc.	31
Breck, John H., Inc.	37	Packwood, G. H., Mfg. Co.	39
Bristol-Myers Co.	11 and 3rd cover	Philip Morris & Co. Ltd.	35
Carbisulphoil Co.	38	Professional Mail Order	38, 40
Cereal Institute, Inc.	14	Rystan Company	19
Ciba Pharmaceutical Products, Inc.	4th cover	Schenley Laboratories, Inc.	5
Coca Cola Company	33	Schering Corporation	1
Commercial Solvents	26	Shield Laboratories	43
Dellert, Jens M. & Associates	7	Smith, Kline & French	23
Denver Chemical Company	22	Standard Pharmaceutical Inc.	34
Desitin Chemical Company	29	U. S. Safety Service	36
Dome Chemicals	38	Wallace & Tiernan Products, Inc.	33
Eaton Laboratories, Inc.	2nd cover	Warner, William R., & Co.	9
Fougera & Co., Inc.	2	Willson Products, Inc.	32
General Bandages, Inc.	42	Winthrop-Stearns, Inc.	18
Hubbs, Charles F., & Co.	42	Wyeth, Inc.	16, 41

New!

SALT TABLETS

(Will Not Cause Nausea)

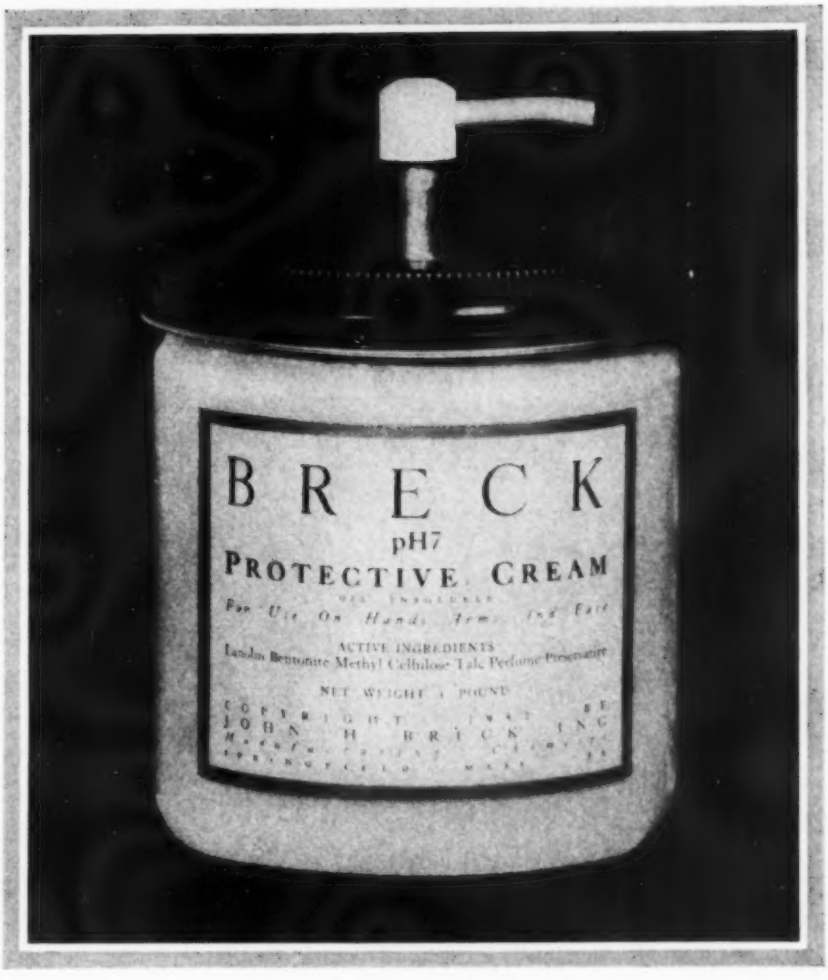
"PEP-UP" Impregnated (controlled dissolving) SALT TABLETS are produced by an exclusive patented process which forms a complete coating around each crystal of salt. The controlled dissolving releases some salt immediately, which insures quick salt replacement, but not in sufficient quantities to cause nausea.

"PEP-UP" Tablets come to you in sanitary factory-sealed Dispensers at no extra cost.

Rx "pep-up"

UNITED STATES SAFETY SERVICE CO

KANSAS CITY 6, MO. · BRANCHES IN PRINCIPAL INDUSTRIAL CITIES



BRECK

pH7 PROTECTIVE CREAM

DISPENSER AVAILABLE FOR POUND JAR OF BRECK pH7 PROTECTIVE CREAM

Many skin irritations, caused by working with industrial materials, can be prevented by protecting the skin. Breck pH7 Protective Cream spreads over the hands and arms and will prevent direct contact with harsh materials. People who work with cooling lubricants, cutting compounds, lime, paint, rubber dust, petroleum solvents, etc., will find these materials easier to remove after using Breck pH7 Protective Cream. The new dispenser top for the lb. jar of Breck pH7 Protective Cream makes application easier, more sanitary and saves the worker time.

Request a new dispenser top with your next order on the lb. size of Breck pH7 Protective Cream.

JOHN H BRECK INC · MANUFACTURING CHEMISTS · SPRINGFIELD 3 MASSACHUSETTS
NEW YORK · SAN FRANCISCO · OTTAWA CANADA

BIRTCHER

Descriptive literature on Birtcher Electro Medical and Surgical Equipment, and its uses, will be sent promptly upon request.

The BIRTCHER CORPORATION
5087 Huntington Drive, Los Angeles 32, Calif.

Books Personal Items

Books of all publishers applicable to the

INDUSTRIAL PHYSICIAN, SURGEON AND NURSE

Catalogue sent upon request

PROFESSIONAL MAIL ORDER, INC.
Michigan Avenue at 15th St.
Chicago 5, Illinois

Watchword for Watch-watchers

For today's BUSY physician—
"First thought in first aid"
treatments for burns, minor wounds, abrasions in office, clinic or hospital.

ANTISEPTIC • ANALGESIC

FOILLE

EMULSION • OINTMENT

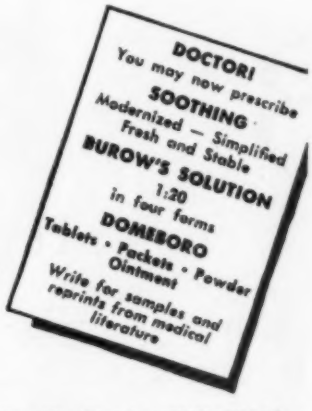
CARBISULPHOIL COMPANY
3116 SWISS AVENUE. DALLAS, TEXAS

**You're invited to request samples and clinical data.*

for all inflammatory conditions of the skin... regardless of cause

DOMEBORO

Mild, soothing wet dressings of **Domeboro** solution have been proved to be materially beneficial in all instances of acute cutaneous inflammation, regardless of cause. Existing in a state of continuous ionization, with a constant pH of 4.2, **Domeboro** wet dressings correct variations in pH values of the skin and thereby maintain the natural defensive mechanism of the integument against pyogenic infection.[1] Equally important is the fact that use of **Domeboro** wet dressings precludes the danger of "over treatment dermatitis."



1. Combes, F. C.: The Wet Dressing. N. Y. Physician, Nov. 1949.

An effective treatment for athlete's feet

and other superficial mycoses—soothing soaks of **Domeboro** solution to reduce inflamation, followed by topical application of **FUNGI-TREAT**, a new, easy-to-use, clinically proved[2] fungicide for the treatment of tinea pedis, tinea cruris and other superficial mycoses.

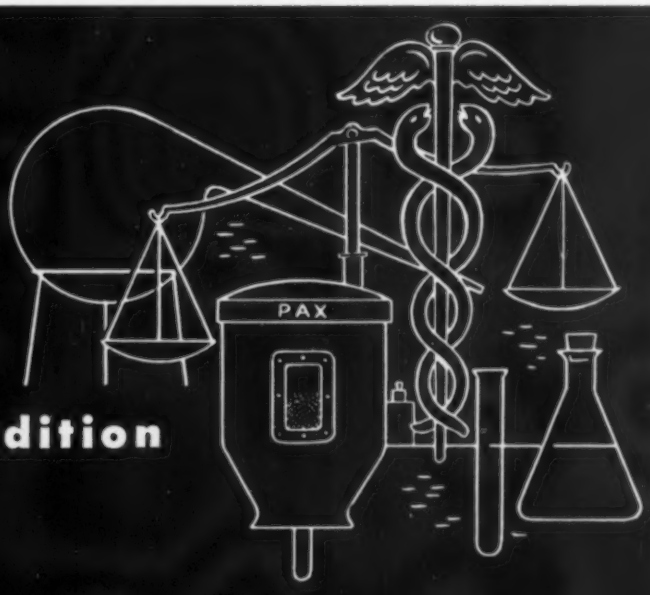
2. Schwartz, L., Robinson, M. and Gant, J. Q.: A New Treatment for Superficial Mycoses. Industrial Medicine, 18:6, 257-258, June 1949.

Reprints and FUNGI-TREAT samples on request

DOME CHEMICALS, INC. 123 WEST 64th ST., NEW YORK 23, N. Y.

Quality

. . . a tradition



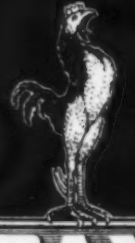
For many years there has seldom been a day that the mail has not brought enthusiastic letters from those who have used Pax-Lano-Sav Heavy Duty. Never has a single one of these thousands of glowing testimonials been solicited; never has compensation been paid to a single individual for expressing their gratification for this wonderful and satisfying product.

In nearly every instance, those who write are specific in their compliments of Pax-Lano-Sav Heavy Duty. There are letters which say the users have found it better than any other product for thoroughly removing deeply imbedded grease and dirt from the skin, as did the wife who recently wrote that "This is magic!" And another: "I personally have not seen anything to compare with the results attained with your product. Its smooth performance in removing most anything from the hands or body —and its smooth after effect on one's skin. It is an ideal product."

Others exclaim about its gentle mildness in comparison with harsh soaps and cleansers; or they enthuse over the soothing emollients which help to overcome skin dryness, chapping and soreness. Still others remark about the luxurious lather of Pax-Lano-Sav Heavy Duty, or its economy, or its safety, or about other special reasons why they enjoy using this superlative cleanser.

So much unstinted and unsolicited praise accorded Pax-Lano-Sav Heavy Duty is not an accident. It is the result of unswerving adherence to a traditional principle of quality—a principle supported by continuous research and testing to produce the finest granulated skin cleanser possible, without regard for effort or expense.

Try Pax-Lano-Sav Heavy Duty. It will be a revelation and a delightful experience that will tell you more effectively than words why the standards established by this extraordinary occupational skin cleanser have never been excelled.



PAX-LANO-SAV HEAVY DUTY

GRANULATED SKIN CLEANSER

PAX

PAX-LANO-SAV*—a superior skin emollient combining lanolin and other special skin normalizers.

ADVERTISED IN AMERICAN MEDICAL ASSOCIATION PUBLICATIONS

The Pax trademark symbolizes a deep-rooted tradition of superlative quality maintained through a quarter century of continuous research and development.

G. H. PACKWOOD MANUFACTURING CO. • 1545-55 TOWER GROVE AVE. • ST. LOUIS 10, MO.

Manufacturers of Fine Industrial Skin Cleansers

*Tradename of G. H. Packwood Mfg. Co

In addition to PAX-LANO-SAV HEAVY DUTY, PAX also offers the following powdered or granulated quality skin cleansers: PAX CORN-TEX • PAX HYSPEED • DICTATOR SPECIAL PURPOSE • BORAPAX • SUPER-X • VELVAPAX LIGHT DUTY • OFFICE-PAX • PAX MECHANICS. Also available are PAX WATERLESS and PAX HECTO INK CLEANSING CREAM • PAX SKIN CLEANSER ECONOMIZER DISPENSERS • and many other fine PAX Products.

50E

Books of Permanent Worth

A BLIND HOG'S ACORNS — *Carey P. McCord, M.D.*

".... dramatizes and enlivens the industrial health field in a series of charming stories, reflecting the vast importance of this field, while entrancing the reader with the art of the true raconteur....This little biographical book tells the industrial preventive medicine story with an effectiveness that ranks with 'An American Doctor's Odyssey,' 'Plague on Us,' and 'Yellow Jack.'"

311 PAGES; ILLUSTRATIONS BY STROBEL; $2.75.

INTRODUCTION TO INDUSTRIAL MEDICINE — *T. Lyle Hazlett, M.D.*

The long awaited Textbook of Industrial Medicine—endorsed by The American Association of Industrial Physicians and Surgeons—nineteen chapters, each by an outstanding expert—invaluable in every phase of industrial medical practice.

253 PAGES, WITH ILLUSTRATIONS AND SUBJECT INDEX; $3.00.

WHO'S WHO IN INDUSTRIAL MEDICINE — *Biographical Dictionary*

Career Data on the Medical Directors, Company Surgeons, Plant Physicians, Consultants, Advisers, Specialists in Industrial Medicine and Surgery and Hygiene, Industrial Doctors. Alphabetically listed with Geographical Index. This is the authoritative Desk Book so essential for all kinds of reference. Answers every question of WHO and WHERE. ".... up to date with an intimate cyclopedia of American biography in this field." $10.00.

TOXICOLOGY — *William D. McNally, M.D.*

By special arrangement—for the benefit of those who have not yet added this indispensable volume to their library of quick reference—we now offer McNally's Toxicology at $5.00 per copy.

This is the same 1,000-page textbook that sold at $10.00 a copy when it was published several years ago, and it is still the outstanding compendium of toxicological information of all kinds—no other work of its scope and detail has yet been produced.

ORDER FROM

PROFESSIONAL MAIL ORDER, Inc.

1461 South Michigan Avenue, Chicago 5, Illinois

A Therapy of Choice for Athlete's Foot

(Dermatophytosis)

SOPRONOL IS EFFECTIVE—it utilizes the fatty acids (propionic and caprylic) found in human sweat and their salts, to combat fungi just as nature does.

SOPRONOL IS SAFE—that is why Sopronol is the first choice of many physicians. Its active ingredients are physiologic; indeed, they occur in common foods.

SOPRONOL®

IMPROVED
PROPIONATE-CAPRYLATE COMPOUNDS

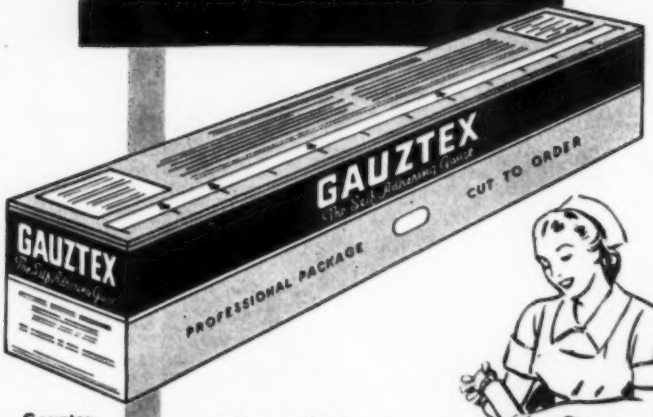
OINTMENT		POWDER		SOLUTION	
Sodium propionate	12.3%	Calcium propionate	15.0%	Sodium propionate	12.3%
Propionic acid	2.7%	Zinc propionate	5.0%	Propionic acid	2.7%
Sodium caprylate	10.0%	Zinc caprylate	5.0%	Sodium caprylate	10.0%
Zinc caprylate	5.0%	Inert ingredients	75.0%	Dioctyl sodium sulfosuccinate	0.1%
Dioctyl sodium sulfosuccinate	0.1%	2 and 5 oz. canisters		Inert ingredients	74.9%
Inert ingredients	69.9%			including n-Propyl Alcohol	12.5%
including n-Propyl Alcohol	10.0%			2 oz. bottles	
1 oz. tubes					

Wyeth Incorporated, Philadelphia 3, Pa.

You get true economy with . . . .

GAUZTEX

THE SELF-ADHERING GAUZE



Gauztex Professional Package 12" x 10 yd.

Regular, Flesh-Tint or Oil-Resistant

You always save when you insist on Gauztex.

First, self-adhering bandage itself is an economy compared with other materials. Takes less time to apply, employees lose less time from the job.

Second, the Gauztex 12" x 10 yd. Professional roll is cut to order, making possible a variety of widths in one package. Professional rolls may be ordered with cuts of ½", ¾", 1½", 2" or wider widths . . . not just 1" or 2" cuts alone.

Economy is only *one* reason why doctors and nurses have for years insisted on Gauztex . . . the most efficient, highest quality cohesive bandage available.

Professional samples available on request.

Of course you know Gauztex, the self-adhering bandage. It is the outstanding name in cohesive gauze, advertised nationally and to the profession. If you desire more detailed information please write.

GENERAL BANDAGES, INC.

531 Plymouth Court Chicago 5, Illinois

HVC

In the Home, Office or Factory

To relieve the distress of dysmenorrhea and enable women to carry on their daily schedules in comfort and security, prescribe

HAYDEN'S

VIBURNUM COMPOUND

HVC

Professional Samples on Request

Cut down absenteeism in your industrial practice by prescribing H V C where an antispasmodic is indicated. H V C relieves smooth muscle spasm without the use of narcotics or hypnotics. Effective in 1867—Equally effective in 1949!

NEW YORK PHARMACEUTICAL COMPANY

Bedford Springs Bedford, Mass.

CORDA-CAPES

DISPOSABLE EXAMINATION CAPES

NON-RATTLING IN THE STETHESCOPE

for examination of girls and women.

600	5c. each
1,000	4¾c. ea.
5,000	4½c. ea.
25,000	4¼c. ea.
100,000 & up	4c. each

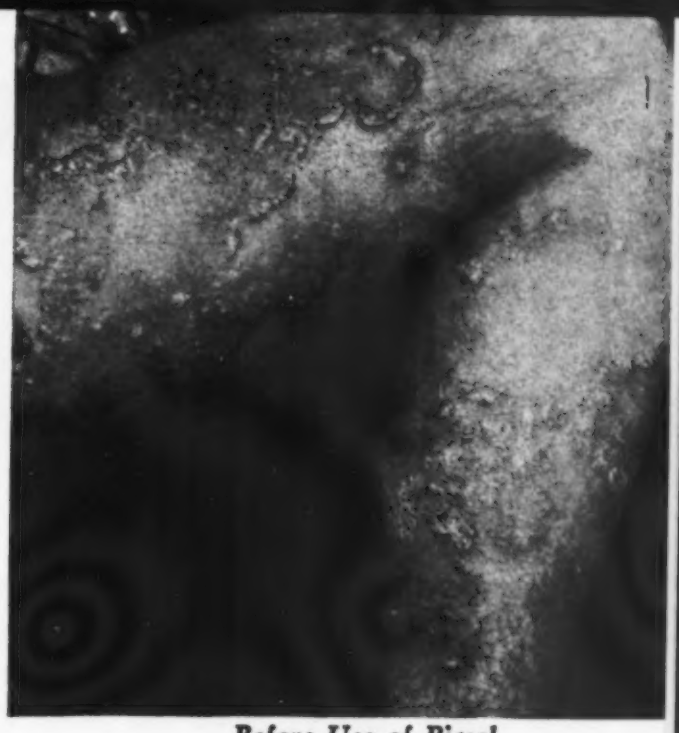
fob. — nyc.

CHARLES F. HUBBS & COMPANY

Est. 1855

389 Lafayette Street, New York 3

PSORIASIS - Easy to treat when you know RIASOL!



Before Use of Riasol

After Use of Riasol

A clean slate is the reward when you treat psoriasis effectively with RIASOL. In 76% of cases, clinical tests have proved that the disfiguring patches gradually fade or disappear. Remissions are usually prolonged with continued treatment.

RIASOL therapy is scientifically based on the known pathology of psoriasis. RIASOL actually penetrates the superficial layers of the epidermis and reaches down to the corium to attack the lesions.

Many dermatologists and general practitioners have formulated their local treatment of psoriasis in one word—RIASOL.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin, invisible, economical film suffices. No bandages necessary. After one week, adjust to patient's progress.

RIASOL is ethically promoted. Supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

Mail coupon today for your free clinical package. Prove RIASOL in your own practice.

MAIL THIS COUPON TODAY FOR A FREE CLINICAL PACKAGE

SHIELD LABORATORIES
12850 Mansfield Avenue, Detroit 27, Michigan

IM 5-50

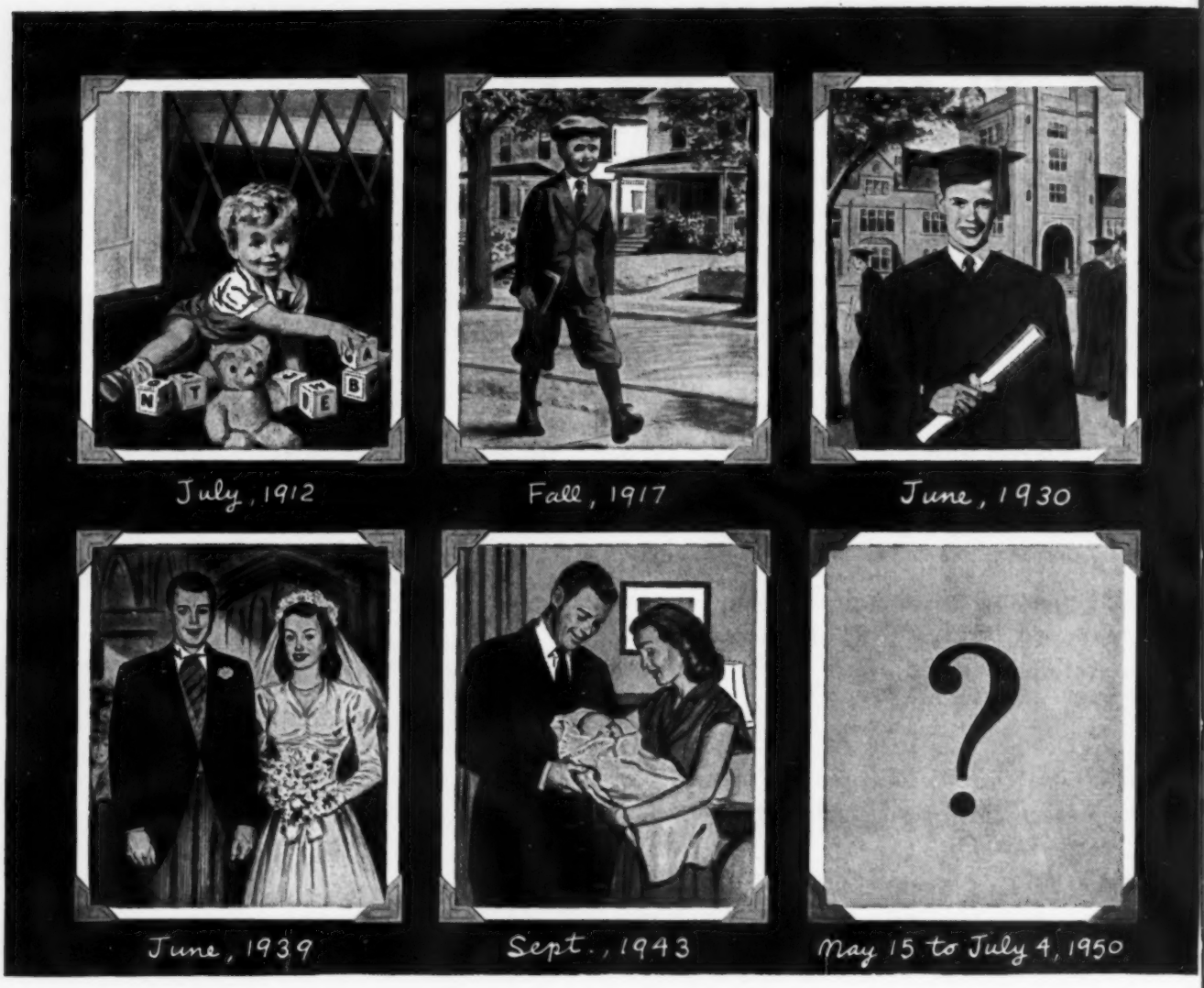
Please send me professional literature and generous clinical package of RIASOL.

_____ M.D. _____ Street

City _____ Zone _____ State _____

Druggist _____ Address _____

RIASOL for PSORIASIS



The next few weeks may be the most important in your life

Between May 15th and July 4th, you can make a move that may change your life, regardless of your age. During these seven weeks of the U.S. Treasury's Independence Drive, you can lay the groundwork for making your fondest dreams come true.

The next decade will be one of the greatest America has ever seen. The opportunity of a lifetime will come to millions—it can come to you.

The opportunity to start your own business. To buy a share in the business you're now in. Even to take a job that pays less at the start—but has a tremendous future.

Don't let your opportunity pass because you were financially unable to grab it!

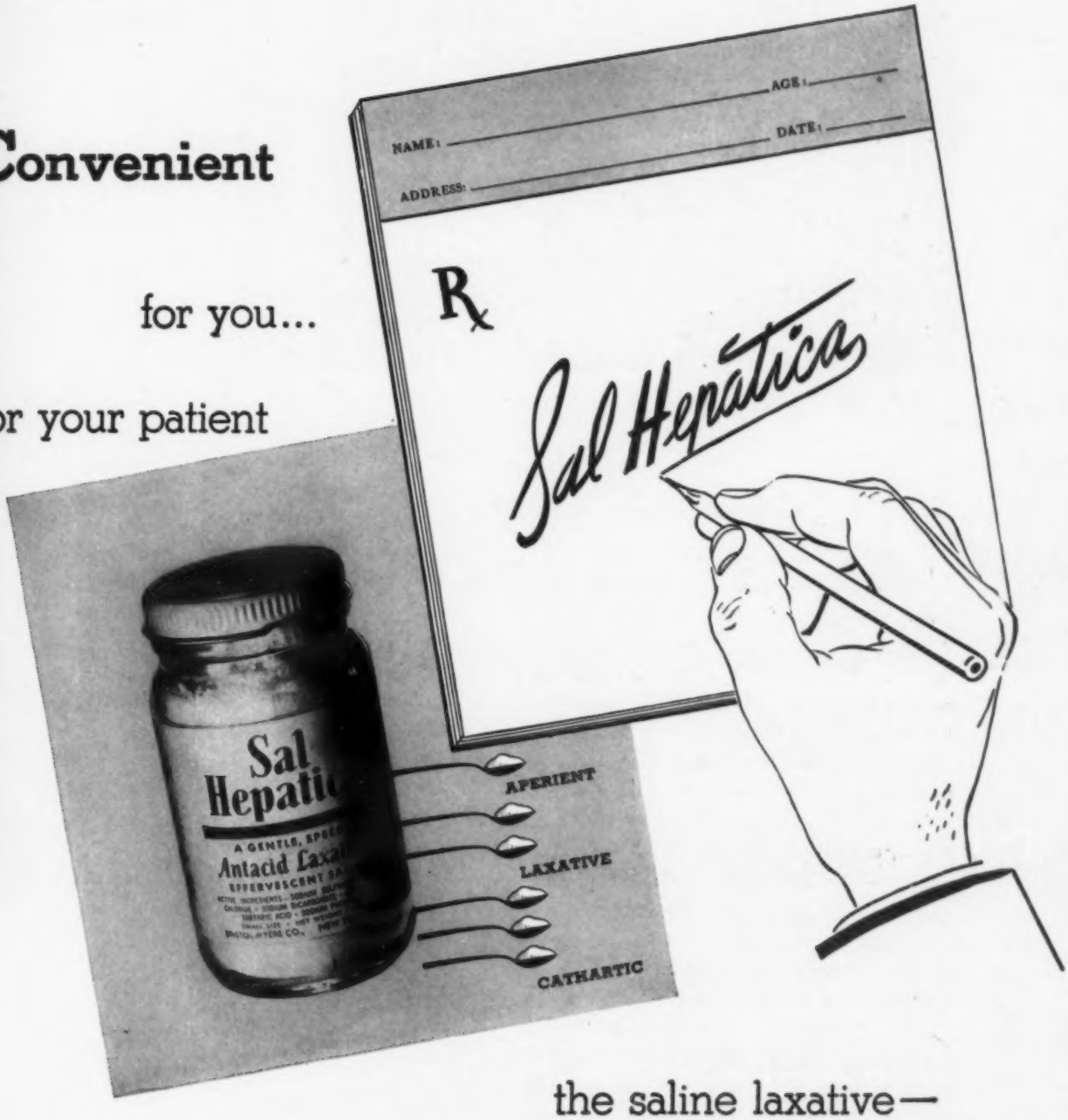
If you are *not* now buying U.S. Savings Bonds automatically, this is the time to begin. If you *are*, sign up for *extra* bonds. Sign up and buy up all you can. That golden opportunity in the 50's may be the "one in a lifetime" for you—be ready for it!

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

Convenient

for you...

for your patient



the saline laxative—

Whether your patient needs a laxative, or an aperient, or a cathartic you'll find it more convenient to write SAL HEPATICA on your prescription pad. No need to specify all the ingredients of three separate formulas, just prescribe SAL HEPATICA and indicate the dosage.

Your patients will find SAL HEPATICA convenient, too. No cluttering of shelves with bottles of different laxatives when one will serve. They'll like its pleasant taste, its effervescence—and, of course, its prompt, gentle action.

a product of **BRISTOL-MYERS** • **19 West 50 Street, New York 20, N. Y.**

In barbiturate poisoning, asphyxia and shock . . . frequent doses of

Coramine 5 cc.

The effectiveness of Coramine was compared with that of picrotoxin in a series of 99 cases of barbiturate poisoning approaching lethal levels. When heroic measures were indicated, both drugs were used. Recoveries in the 99 cases totaled 91. "In no case where Coramine failed did picrotoxin succeed in saving the patient. In several cases where picrotoxin did not help, Coramine gave good results."[1]

"It is our feeling that where Coramine has been used with unsatisfactory results in the past, in many instances better effects would have been obtained with a schedule of larger doses." Five to ten cc. of Coramine were administered intravenously every 5 minutes for the first hour; and after the first hour, booster doses of 5 cc. intravenously were given on the hour or in more serious cases every half hour, until the patient's reflexes returned or the patient responded to stimuli such as questions.

"Should be in every emergency kit"[2]

Besides its use in barbiturate poisoning, Coramine is particularly useful if respiratory depression has been produced by ". . . chloral hydrate or other hypnotics, alcohol, and opium or its derivatives. It has been used in poisoning by . . . certain of the toxic mushrooms, carbon monoxide, and uraemia with beneficial results, and in respiratory failure due to ether, spinal anaesthesia or asphyxia neonatorum. Coramine is, then, an emergency drug of the highest possible value, and should be in every physician's emergency kit."[2]

Maintains shock patient for hours

"In the absence of plasma or whole blood the peripheral circulation can be successfully compensated in shock for about 2 hours and maintained for a longer period by the repeated administration of this drug used in dosage of from 5 to 10 cc. intravenously at intervals of 2 to 3 hours."[3]

Further data on Coramine therapy and dosage, together with a complimentary supply of 5 cc. ampuls of Coramine, will be sent to physicians on request. Address Medical Service Division, Ciba Pharmaceutical Products, Inc., Summit, New Jersey.

1. Watts & Ruthberg: Ann. Int. Med., 29:1104, Dec. 1948
2. Henderson, V. E.: Canad. M. A. J., 35:636-637, 1936
3. Gunther, Lewis: U. S. Nav. Med. Bull., 44:300, 1945

Ciba PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY

CORAMINE (brand of nikethamide) Trade Mark Reg. U.S. Pat. Off. 2/1375M